

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

LaVaughn F. Watts Jr.

Serial No.: **08/568,904**

Filed: **12/07/1995**

For: **REAL-TIME THERMAL MANAGEMENT FOR COMPUTERS**

Docket No.: **TI-20567**

Art Unit: **2112**

Examiner: **Meyers, Paul R.**

Conf. No.: **7575**

**SUPPLEMENTAL DECLARATION OF PRIOR INVENTION IN THE UNITED
STATES TO OVERCOME CITED PATENT - 37 C.F.R § 1.131**

Dear Sir:

I, LaVaughn F. Watts Jr., do hereby declare:

1. I am the inventor of the above-cited invention.
2. I submit this Supplemental Declaration to establish conception of the invention in this application in the United States on a date prior to October 11, 1994, which is the effective date of the cited U.S. patent to Dischler et al.(6,311,287)(newly cited by the Examiner in the Office Action dated May 13, 2005), and diligence in reducing the invention to practice from a date prior to October 11, 1994, which is the first effective date of cited U.S. patent to Dischler et al. (6,311,287), until the invention was actually reduced to practice on or before a date no later than December 15, 1994.
3. To establish the date of conception of the invention of this application prior to October 11, 1994, I submit true copies of the following documents (NOTE: EXHIBITS A-P submitted previously with Declaration on November 12, 2005):

EXHIBIT A - Copy of a slide presentation titled Notebook Strategic Business Unit Roadmap Key Technology Approach which I prepared on March 23, 1994 for presentation to TI upper management. It was my intent to commercialize the present invention, at least as of March 23, 1994, in a future TI laptop computer identified as project Lilyp which laptop would incorporate an Intel Pentium processor. Slide 1 discloses the Pentium processor as a P54C-100MHZ. Slide 2 identifies the project as "Pentium Notebook". Slide 3 discloses the notebook project as "Lily - 10.4 - Pentium 100MHz". Slide 8 discloses that the notebook project will have "heat management systems". Slide 9 discloses "TCP with Heat control". Slide 13 discloses "less heat - without fan;

EXHIBIT B - Copy of program DATA.ASM that I created on May 4, 1994 that was related to the present invention, that was to be implemented with Chicago (codename for Microsoft Windows 95);

EXHIBIT C - Copy of program BADATA.ASM that I created on May 4, 1994 that was related to the present invention, that was to be implemented with Chicago (codename for Microsoft Windows 95);

EXHIBIT D - Copy of program CHICAGO.INC that I created on May 4, 1994 that was related to the present invention, that was to be implemented with Chicago (codename for Microsoft Windows 95);

EXHIBIT E - Copy of e-mail message (08/30/94) from Mark Rendon to lily folks (of which Vaughn Watts was a recipient) which sets forth under "Notebook actions" & "Tasks", that Vaughn Watts was under #23 to have BatteyPro and SMI heat management ready on 09/15/94;

EXHIBIT F - Message from Jack Rawls to Dennie Shadrick (09/02/04), with copy to Vaughn Watts, identifying Project Milestones for Lilyp - Engineering models were due

09/23/94; Pre-production was due 10/14/94 and Mass production was due on 10/24/94. Page 2 of the document states "the testing (on completed Lilyp sample) yielded valuable data on thermal profiles";

EXHIBIT G – Copy of SWDEV Heat programs showing that I met the time table of 09/15/94 in EXHIBIT K above – see HEAT.BAT last modified on 09/14/1994;

EXHIBIT H - Copy of a slide presentation titled Notebook Strategic Business Unit Roadmap Key Technology Approach which I prepared on September 22, 1994, which was an update of my slide presentation dated March 23, 1994 for presentation to TI upper management (see EXHIBIT A). Most of the slides are repeats, with exceptions that slides 1 and 2 now identify the "Pentium Notebook" as being a "Lily Notebook". Slide 2 disclosed that the Lily Notebook Pentium-90, (i.e., Lilyp) predicted commercialization date has slid from late in 4Q94 to early 2Q95. Much of the remainder of the presentation is a repeat from EXHIBIT A;

EXHIBIT I – Copy of NewFile=Trange.INC which lifted and recoded on (10/14/94) which is relevant to the invention. {NOTE: changes made to the program after 10/14/94 to improve functionality are dated per the change date}.

EXHIBIT J – Copy of e-mail message from Sandeep Bhadsavle to Vaughn Watts (11/02/94) informing Vaughn that the "2nd IO channel 54h (cmd/sts just like 64h) & 50h (data just like 60h) is now functional (which was channel from which to read CPU temperature). Also note the fourth line from the bottom which states, "all comdex units will have this upgrade";

EXHIBIT K – Copy of e-mail message from Sandeep Bhadsavle to Vaughn Watts (11/03/94) encouraging Vaughn to write to 64h and read data 60h for response. And

responsive message from Vaughn Watts to Sandeep telling him that I tried to read the cpu temp (second ad channel) using the c4h command with no luck;

EXHIBIT L – Copy of document showing that “Read A/D support on 54/50 added” (Released 11/08/94). This is important since this change allowed my invention to work as designed;

EXHIBIT M – Copy of Vaughn Watts expense report for the dates 11/11-17/94 for trip to COMDEX convention in which I took an engineering model of a laptop computer that incorporated the invention in order to show it (under Non-Disclosure Agreement only) to suppliers and potential customers. The invention was reduced to practice in the engineering model as of this date;

EXHIBIT N - Copy of SWDEV Heat programs. With the exception of one ZIP file, all were completed prior to 11/09/94;

EXHIBIT O – Copy of pages 2, 17, 20, 21 and 23 of a document entitled “Lily Keyscan Board Specification – Revision 2.4 – November 16, 1994”, which shows that CPU and battery temperature were being detected and evaluated;

EXHIBIT P – Copy of FILE=Thermal.Equ (dated 12/15/94) as disclosed on page 44 of the present application. Line TP1 confirms that equ 50;90 was tested. This is evidence that a version of the invention intended for deployment in a commercial product was working as of this date.

EXHIBITS A-P above were previously submitted with Applicant’s Declaration of Prior Invention in the United States to Overcome Cited Patent – 37 C.F.R. § 1.131 mailed to the USPTO on November 14, 2005 – and are not being resubmitted. The below additional exhibits are being submitted herewith.

EXHIBIT Q – Confirms that the file HEAT.BAT existed as of September 14, 1994. HEAT.BAT (HEAT.BAK on disc) was used for testing and factory run-in to ensure temperature monitoring and countermeasures conformed to specification and was released for engineering model build no later than September 14, 1994.

EXHIBIT R – Copy of file AMP530F.ASM in which coding was started no later than May 4, 1994. The file is a routine to enable/disable power management.

EXHIBIT S – Copy of file AMP5306.ASM in which coding was started no later than May 4, 1994.

EXHIBIT T – Copy of file BA.ASM, which is related to file BA.DATA identified in EXHIBIT C.

EXHIBIT U – Copy of file TEMPTM5.ASM which I coded no later than August 30, 1994.

EXHIBIT V – Document created by Applicant to show how the claim limitations are supported by the cited exhibits

EXHIBIT W – Document created by Applicant to show timeline of completed events – to be used in conjunction with EXHIBIT V.

4. DISCUSSION – I was preparing code for the present invention on or before May 4, 1994. EXHIBIT B shows that the files: idletick, timertick; keyboardtick; power_level; dos_power_level; Maxpower_level; busy_int2f; busy_int28; busy_int21; wstack; ac_parms; sound_parms; ESeries; and sleep_tick_count were coded as of May 4, 1994. I finished the code for the prototype model no later than September 2, 1994. The prototype model, which used ram-based memory, was tested and received preliminary UL

(Underwriters Laboratory), CUL, and TUV approval no later than September 2, 1994 (see third paragraph of EXHIBIT F-2 under "New Products"). Line 1 of EXHIBIT F-3 indirectly confirms this by stating that "remaining" LilyP prototypes were to be completed, which confirms that at least one prototype was finished by September 2, 1994.

EXHIBITS G, N and Q confirm that the file HEAT.BAT existed no later than September 14, 1994 and this file was implemented in the prototype model running as of September 2, 1994. HEAT.BAT (HEAT.BAK on disc) was used for testing and factory run-in to ensure temperature monitoring and countermeasures conformed to specification and was released for engineering model build no later than September 14, 1994. EXHIBIT R is a copy of file AMP530F.ASM in which coding was started no later than May 4, 1994. The file is a routine to enable/disable power management. EXHIBIT S is a copy of file AMP5306.ASM in which coding was started no later than May 4, 1994. The file is a routine to determine if the CPU is busy – if yes, it reduces IDLE. Files AMP530F.ASM and AMP5306.ASM are associated with program CHICAGO.INC identified in EXHIBIT D.

EXHIBIT T-(1-5) discloses file BA.ASM, which is related to file BA.DATA identified in EXHIBIT C. File BA.ASM is a routine to determine if the CPU requires thermal slice servicing. The file was completed sometime between May 4, 1994 and August 30, 1994. BA.ASM-1 shows the file contains a FORCED COOLDOWN LOOP at Interrupt level. BA.ASM-2 shows the file called on every system timer interrupt and was ready to look at a thermal event. BA.ASM-3 shows that TLEVELn interfaces with TEMPTM5.ASM for RAM Based or interfaces with CMOS storage for same A/D Temperature value if FLASHROM Based. It also confirms the file enabled looking at a thermal event slice period based on temperature. BA.ASM-4 confirms AC and Battery Operation House cleaning and NON-Thermal Management Event. BA.ASM-5 confirms Thermal Management Event – slice needed during interrupt? and forcing cool down loop.

EXHIBIT F-1 confirms that non-production engineering models of the apparatus (LilyP) were to be completed no later than September 23, 1994, with pre-production engineering models to be completed no later than October 14, 1994. The non-production engineering model of the apparatus (LilyP) was completed no later than September 23, 1994. EXHIBIT U-(1-3) discloses relevant portions of file TEMPTM5.ASM which I coded no later than August 30, 1994. To the extent I made any changes to file TEMPTM5.ASM as it evolved into file Trange.INC, the changes did not affect the patentability of the claims. As with the prototype, the pre-production model used ram-based memory. However, the pre-production model slated for completion on October 14, 1994 was specified to have ROM-based memory. Accordingly, I finished re-coding file TEMPTM5.ASM as file Trange.INC (EXHIBIT-I) on a date no later than October 14, 1994 so as to run on a ROM-based preproduction model.

Further, since agency testing was started before 9/15/94, all code that changed clocks had to be finished before FCC agency testing was started. That did not mean that I could not change the time that I spent inside one clock or another (e.g. change the temperature settings ranges, or change the period within the clock cycle to better save more power or more heat). However I could not introduce any NEW frequencies and had to be able to run at all frequencies. As for UL I needed the thermal management to pass the UL or it would get too hot, so in combo of agency testing, the raw basic code was there.

The major differences after 9/15/94 was changing the code over to use the ROM rather than RAM, then use FLASH rather than ROM. After the alternate channels 50 and 54 hex to the keyboard controller to read the A/D to get the temperature was not written until 10/14. Prior to 10/14 I used channels 60 and 64 hex to read the A/D from the keyboard controller to get the temperature. Both channels were to give the exact same information. However for IBM compatibility, I needed to change the temperature read channel from 60/64 to 50/54 prior to production to keep software from locking up that

might access the keyboard via the 60/64 at the same time that we wanted to read the temperature. Also, by changing the channels to 50/54 I could read the temperature anytime without worrying about who was also accessing the keyboard controller and when. Evidence documenting the problem with the 50/54 channel that I found after I changed to code over to use it prior to engineering model used at COMDEX is found in EXHIBITS J, K, L. The original patent application was filed with my best implementation of all the code at the time that included things done on or before 9/15/94 up to filing the patent. I was very careful in the code to note when I made changes.

The TRANGE code submitted was what was used in production. Notice that it read as "recoded from TEMPTM5". There is no change notice inside the code reflecting any other changes. The only thing different about this code and the TEMPTM5 code was the use age of 50/54 in the TRANGE vs. 60/64 in the TEMPTM5 code. I had to keep two sets of code running at the time. The agency code and test code used the TEMPTM5 with 60/64 channel access and the TRANGE used the 50/54 and it was in debug stage until the 50/54 code worked. Functionality was split between the Flash Driver Interface and the FlashROM code after October 14, 1994. The main logic of TEMPTM5.ASM was later used inside the RAM portion of the Flash Driver Interface that called TRANGE located in FLASH ROM. From August 30, 1994 until October 14, 1994, RAM resident functions within TEMPTM5.ASM were used for testing, prototype, and samples.

My debugging was successful and this problem no longer existed in the engineering model of the laptop computer (Lily) that I took to the COMDEX convention during 11/11-17/94. So, the units for COMDEX used the new TRANGE code rather than the test agency code. However, for patent purposes, the codes were functionally the same with regard to the invention for which patenting is sought.

EXHIBIT E task #6 shows that the complete board layout for a prototype computer was to be finished by September 2, 1994. Accordingly, I confirm that – Copy of e-mail

message (08/30/94) from Mark Rendon to Lily folks (of which Vaughn Watts was a recipient) which sets forth under "Notebook actions" & "Tasks", that Vaughn Watts was under #23 to have BatteyPro and SMI heat management ready on 09/15/94, which were to be implemented on the prototype computer finished by September 2, 1994.

In the Office Action dated February 2, 2006, Examiner determined that Applicant's Declaration submitted on November 14, 2005 "did not indicate which claim limitations are supported by the cited Exhibits". EXHIBIT V is a document I have created to indicate which claim limitations are supported by the cited Exhibits. EXHIBIT I is cited extensively in EXHIBIT V to provide enabling support for the claims. EXHIBIT I is a copy of NewFile=Trange.INC which lifted and recoded on (10/14/94) and was the code used on the engineering model I took with me to COMDEX. It is important to note, however, that file Trange.INC is a recoding of a previous file TEMPTM5.ASM., which was implemented on a prototype computer on or before September 15, 1994, and for patentability purposes, provided the same support.

EXHIBIT V – (1-6) show how Claim 17 is supported by the cited Exhibits. EXHIBIT V – (7-12) show how Claim 18 is supported by the cited Exhibits. EXHIBIT V – (13) shows how Claims 19 and 20 are supported by the cited Exhibits. EXHIBIT V – (14-22) show how Claim 21 is supported by the cited Exhibits. EXHIBIT V – (23-24) show how Claim 23 is supported by the cited Exhibits. EXHIBIT V – (25-36) show how Claim 74 is supported by the cited Exhibits. EXHIBIT V – (37-50) show how Claim 75 is supported by the cited Exhibits. EXHIBIT V – (51-64) show how Claim 76 is supported by the cited Exhibits. EXHIBIT V – (65) shows how Claims 77-79 are supported by the cited Exhibits. EXHIBIT V – (66) shows how Claims 80-82 are supported by the cited Exhibits. EXHIBIT V – (67) shows how Claims 80-82 are supported by the cited Exhibits. EXHIBIT V – (68) shows how Claims 83-85 are supported by the cited Exhibits. EXHIBIT V – (69-71) show how Claims 83-85 are supported by the cited Exhibits. EXHIBIT V – (72-74) show how Claims 86-88 are supported by the cited Exhibits. EXHIBIT V – (75-77) show

how Claims 88-91 are supported by the cited Exhibits. EXHIBIT V – (78) shows how Claims 92-94 are supported by the cited Exhibits. EXHIBIT V – (79-80) show how Claims 95-97 are supported by the cited Exhibits. EXHIBIT V – (81-82) show how Claims 83-85 are supported by the cited Exhibits. EXHIBIT V – (83) shows how Claims 101-103 are supported by the cited Exhibits. EXHIBIT V – (84-85) show how Claims 104-106 are supported by the cited Exhibits. EXHIBIT V – (86) shows how Claims 107-109 are supported by the cited Exhibits. EXHIBIT V – (87) shows how Claim 110 is supported by the cited Exhibits. EXHIBIT V – (88) shows how Claim 111 is supported by the cited Exhibits. EXHIBIT V – (89) shows how Claim 112 is supported by the cited Exhibits. EXHIBIT V – (90) shows how Claim 113 is supported by the cited Exhibits. EXHIBIT V – (91) shows how Claim 116 is supported by the cited Exhibits. EXHIBIT V – (92) shows how Claims 117-118 are supported by the cited Exhibits. EXHIBIT V – (93) shows how Claim 119 is supported by the cited Exhibits. EXHIBIT V – (94-102) shows how Claim 122 is supported by the cited Exhibits. EXHIBIT V – (103-111) shows how Claim 123 is supported by the cited Exhibits. EXHIBIT V – (112-121) shows how Claim 124 is supported by the cited Exhibits. EXHIBIT V – (122-130) shows how Claim 125 is supported by the cited Exhibits. EXHIBIT V – (131-139) shows how Claim 126 is supported by the cited Exhibits.

EXHIBIT W is a document created by Applicant to show timeline of completed events – to be used in conjunction with EXHIBIT V.

5. I hereby declare that I conceived the invention (see Exhibits A & H) on a date prior to October 11, 1994, which is the first effective date of cited U.S. patent to Dischler et al. (6,311,287). Thereafter I worked diligently on reducing the invention to practice in a timely and orderly manner (see Exhibits B-G & Q-U) from at least one day prior to October 11, 1994, which is the first effective date of cited U.S. patent to Dischler et al. (6,311,287) until the invention (using HEAT.BAT - BatteyPro and SMI heat

management ready on 09/15/94, implemented on the prototype computer finished by September 2, 1994) was actually reduced to practice, which Applicant now believes to be no later than September 15, 1994 - which is prior to October 11, 1994.

Even if, *arguendo*, a determination is subsequently made that I have not submitted sufficient proof to show actual reduction to practice no later than September 15, 1994, I respectfully submit that the above identified Exhibits prove conception of my invention and additional Exhibits I-O show that I worked diligently on reducing the invention to practice in a timely and orderly manner from at least one day prior to October 11, 1994, which is the first effective date of cited U.S. patent to Dischler et al. (6,311,287) until the invention was actually reduced to practice. While I now believe that my invention was actually reduced to practice no later than September 15, 1994, in the event the evidence I submitted is insufficient to show actual reduction to practice by September 15, 1994, I believe that the submitted evidence proves diligence in reducing the invention to practice no later than November 8, 1994 (fall back actual reduction to practice date) in the engineering notebook model I took to COMDEX on November 11, 1994. Accordingly, I now respectfully submit that my actual reduction to practice date was well before December 15, 1994 (see Exhibit P).

6. I submitted my original Declaration prior to final rejection and was submitted at Applicant's first opportunity to respond since the Dischler et al. reference was first cited in the Office action dated May 13, 2005. Examiner later determined in an Office Action dated February 2, 2006, that the Declaration was insufficient to establish diligence from a date prior to the date of reduction to practice of the Dischler et al. reference to either a constructive reduction to practice or an actual reduction to practice. More particularly, Examiner determined that the Declaration does not indicate what claim limitations are supported by the cited Exhibits. While I disagree with Examiner's insufficiency determination, I now submit this Supplemental Declaration to clarify the record and clearly overcome Examiner's insufficiency determination. This Supplemental Declaration is my

first opportunity to respond to Examiner's insufficiency arguments as set forth in the Office Action dated February 2, 2006.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.



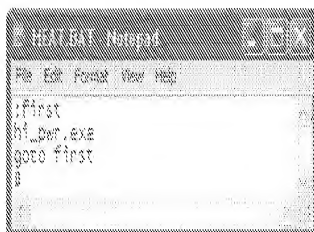
La Vaughn F. Watts Jr.

Signed by:	Vaughn Watts
Date:	Timestamped
Location:	
Reason:	Final

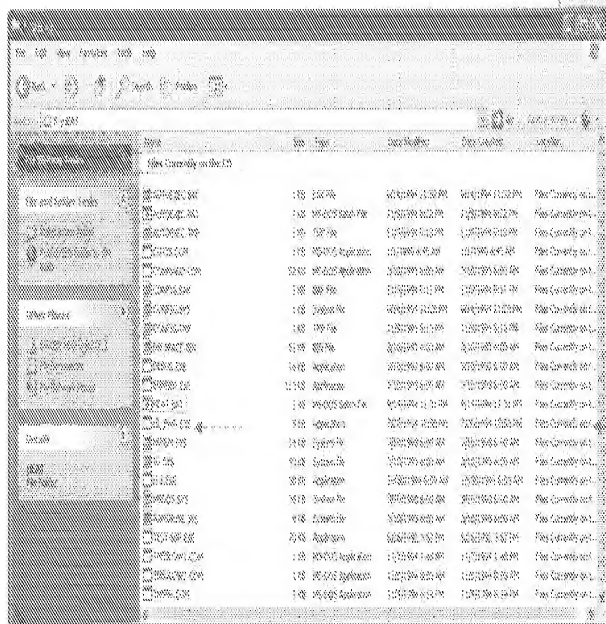
Date: November 14, 2006

7GswT2aWCT/JVqoxUTTPtOOpA=

New Exhibit HEAT



HEAT.BAT (HEAT.BAK on disc) used for testing and factory run-in to ensure temperature monitoring and countermeasures conformed to specification – release to factory 9/14/1994 for Engineering Model Build



```
Heat.bat runs program
Hi_pwr.exe
To generate Heat inside
Engineering Model
Hi_pwr.exe created
7/20/1994
```

Exhibit HEAT-1

EXHIBIT O-1

New Exhibit APM530F.ASM

[illegible]

Routine to enable/disable
Power Management – started
Coded 5/4/94

```

APM750: APM: Help
File Edit Format View Help

File=APM750F.A2M
WALLS
1/6/04
Coded for Chicago 5/4/94

Enable/Disable Power Management Functionality
Enter: ah = $3h
      al = 05h
      bx = FFFF Enable/disable all power management
      cx = 0 to disable power management
           1 to enable power management
Exit: if successful
      CY = clear
      if unsuccessful
      CY = set
      ah = 06h power management functionality disabled
           06h unrecognized device ID
           0Ah parameter in CX out of range

APMENG000PM - PROC - RECALL

```

Exhibit APM530F.ASM-1

EXHIBIT R

New Exhibit APM5306.ASM

```

UPLS 8086 ASM - Notepad
File Edit Format View Help

FILE=APM5306.ASM
Vaughn Watts 1/22/92
Coded for Chicago 5/4/94 waits
-----CPU BUSY POLL LOOP-----

CPU Busy
Enter: AH = 55h
      AL = 00h
Exit:  CX = 0

APMCPUbusy PROC    NEAR

    push    ds                ; Save Data Segment
    push    cs
    pop     ds                ; Setup common real vs p82 mode
    call    CommonAPMCPUbusy
    pop     ds
    pop     si
    ret

APMCPUbusy ENDP

CommonAPMCPUbusy PROC    NEAR

    cmp     InterfaceComment,INTERFACE_OFF
    je      APM5306NotCommented

    cmp     APMEngageSystem,INTERFACE_ENGAGED
    jne     APM5306NotEngaged

    Give the CPU some bandwidth

    mov     timerick,0        ; slow down IDLE
    mov     timerick,0        ; slow down INT 21
    cld                         ; no error
    ret

APM5306NotEngaged:
    mov     ah,APM_ERROR_08
    stc
    ret

APM5306NotCommented:
    mov     ah,APM_ERROR_00
    stc
    ret

CommonAPMCPUbusy ENDP

```

Routine to determine if CPU is
busy – reduces IDLE
started Coded 5/4/94

Exhibit APM5306.ASM-1

EXHIBIT S

New Exhibit BA.ASM

```

;-----
; File: 01.asm
; Version: 1.0/1/94
;-----
; Interrupt 0: Timer interrupt service routine.
;-----
; Note the following two labels and redefinition on each timer tick:
; our change. They are in fact a dummy timer mechanism to
; the default TIMER code of interrupt interrupt.
;-----
; timer_tick dx 0 ; timer tick/one tick loop on interrupt
; our_timer dx 0 ; repeat timer/one tick loop on timer
;-----
; INCLUDE ..\asm\ba.asm
; INCLUDE ..\asm\thermal.asm
; INCLUDE ..\asm\ba17a.asm
;-----
; *****
; TIMER: interrupt and handle the timer tick interrupt to
; Note that this routine is executed once per timer tick, but the
; updating of time is only done once per second. This should make
; it virtually non-noticeable as far as power consumption goes.
;-----
; Also, the WARMUP IN PROGRESS state are stored in here
;-----
; *****
; Read AC Port Operations
;-----
; BATTERY TEST
; je no_battery
; int 0x10 ; int 0x10 is the system interrupt
; jmp short Interrupt0
;-----
; end on battery
; return
;-----
; In the Low Power States
;-----
; BATTERY TEST
;-----
; test al, LOW_BATTERY_BIT ; Find out if low battery?
; je battery_is_low ; yes
; jmp battery_high ; no
;-----
; *****
; end of file

```

Routine to determine if CPU is
needing thermal slice
servicing. Written sometime
on or after 5/4/94 and before
8/30/1994. – contains
**FORCED COOLDOWN
LOOP** at Interrupt level.

Exhibit BA.ASM-1

EXHIBIT T-2

Now ready to look at thermal event

Exhibit BA.ASM-2

New Exhibit BA.ASM

[illegible]

Thermal Management Event

Now ready to look at thermal event slice period based on temperature

[illegible]

Exhibit BA.ASM-3

EXHIBIT T-3

New Exhibit TEMPTM5.ASM

File=TEMPTM5.ASM

Coded: Wurts (8/30/94)

Added new BPRO CMOS Locations for holding values: Wurts (10/14/94)

Changed Keyboard channel to 50/54 for the C4 command so no lockups (10/14/94)

Secondary keyboard channel now works for Lillytemp. be sure to get new
keyscan code from Sandeep and update your HS ..11/19/94vw

Reviewed for flashbios issues 2/11/95

Read the Battery on LILLYP from Keyboard Controller

Calling Arguments

Call TempLilyBattery

cmp al,0ffh

je OnACLoadFF ; Don't know value since it's on Charge

TempLilyBattery Proc Near

mov al,0ffh

ret

mov TempLilyBtry,1

push si ; Save registers not needed

push cx

CLI ; Disable Interrupts

Also Reads A/D
Converter for Lillyp
(TM5000)
Temperature
Sensor when it
reads battery status

Exhibit TEMPTM5.ASM-1

EXHIBIT U-1

New Exhibit TEMPTM5.ASM

```
PBBATTERY_RETRY equ 250
    mov     cx,PBBATTERY_RETRY    ; retries
tset_quiet_0:
    in      al,54h                ←-----
    test    al,1                  ;check the output buffer status
    jz      tset_quiet_1          ;output buffer not full?
    jmp     short tSet_status_unknown:[7.10T3]

tset_quiet_1:                      ;yes, output buffer not full.
    test    al,2                  ;check input buffer status
    jnz     short tSet_status_unknown:[7.10T4]

;
;   Should keyboard or Aux or both be disabled at this point?
;
;   To disable keyboard, port 64=0adh to disable aux, port 64= 0a7h
;   To enable keyboard, port 64=0aeh to enable aux, port 64= 0a5h
;
;
    mov     al,0c4h               ;no, then output the read A/D
    out     54h,al                ;was 64h 10/14/94yw ←-----
tset_quiet_2:
```

Modified on
10/14/94 to use
new 50/54h A/D
channel rather than
previous 60/64h
channel

EXHIBIT U-2

Exhibit TEMPTM5.ASM-2

New Exhibit TEMPTM5.ASM

```

tSet_quiet_2_Okay:      [7.10.3]
    jmp     $+2
    in      al,54h       ;read status port
    jmp     $+2
    jmp     $+2
    test    al,2         ;check status of input port and output port.
    jnz     tSet_quiet_2 ;full?, then go back.
    mov     al,06         ;empty, then output the read A/D 6
    out     50h,al        ;was 60h 10/14/94vw

```

Modified on
10/14/94 to use
new 50/54h A/D
channel rather than
previous 60/64h
channel

```

tSet_quiet_3:
    loop    tSet_quiet_3_Okay [7.03]
    jmp     short tSet_status_unknown[7.03]
tSet_quiet_3_Okay:
    jmp     $+2
    in      al,54h       ;read the status 10/14/94vw
    test    al,1         ;check the output buffer status
    jz      tSet_quiet_3 ;check if output buffer not full, then go back

```

Reads Temperature
Data from Sensor

```

    in      al,50h       ;full, then, get A/D value 10/14/vw
    mov     TempLib.al

```

Reads Temperature
Data from Sensor

Constant 00 - 255 value : 0 - 5000mV

Constant 10mV/1 degree C

$k = (5000/255) = 19.607843$

$n \text{ degree C} = k/10$

$n \text{ degree C} = k/10 * \text{Value}$

Read of Temperature
Data from Sensor must
be converted to n degree
C via equation, Trange's
job to convert and range

EXHIBIT U-3

Exhibit TEMPTM5.ASM-3

Claim 17

17. (Previously presented) An apparatus, comprising:
means for sampling a temperature associated with the operation of a processing unit within said apparatus; (A)

means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said processing unit; (B) and

means for using said prediction for automatic control of temperature within said apparatus. (C)

```

*****
cmp     al,0x0          ;Time to read data from #3?
je      DoKBTThermalRead
*****
mov     al,0
dec     al
and     ah,NOT 10h      ;Keep ubcdid stuff
shl     al,1
or      ah,al           ;New value
jmp     WriteDownCount?

DoKBTThermalRead:
;
; Try for a Thermal Management AIC: return time count + 0
;
then
; do read only, since we need to leave it alone.
;
call    UpdateTemperature ;Do it
mov     al,0ah
call    CMOSRead          ;Read Temperature byte
mov     al,0
and     al,0x00000000h   ;Clear the time and level
please
mov     ah,al            ;Get the direction
and     al,?             ;Level computed for temp
range
and     bh,110000000h    ;Direction

cmp     ah,0             ;Good read?
jbe     LeaveDownCount?  ;No, leave it alone
;
; This is where we do some thermal management
; Hold ah value or reset it as needed...
;
mov     bh,110000000h    ;OSC?
jbe     NotTX_OSC        ;No:

```

EXHIBIT I-2

EXHIBIT V

A sample

Temperatures and control signals are returned in CMOS storage area that is read by CMOSRead program

(A) ...sampling a temperature associated with the operation of a processing unit within said apparatus

Implementation functional
For prototype and patent purposes
By 9/15/1994

Claim 17

17. (Previously presented) An apparatus, comprising:
means for sampling a temperature associated with the operation of a processing unit within said apparatus; (A)

means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said processing unit; (B) and

means for using said prediction for automatic control of temperature within said apparatus. (C)

```

*****
op    al,00h           ;Time to read data from VPT
je     Do$ThermalRead
*****
shl     al,2
dec     al
and     ah,NOT 30h      ;Keep theold stuff
shl     al,3
or      ah,al           ;New value
jmp     WriteDownCount?

Do$ThermalRead:
/
/      Try for a Thermal Management hit: return time count = 0
then
/      we read one, time we need to leave it alone.
*****
call    UpdateTemperature ;Do it
mov     ax,30h
call    CMOSRead          ;Read Temperature Byte
*****
mov     al,30h           ;direction, time, level
and     ah,30h           ;Just the time and level
jle     $else
mov     bh,al            ;Set the direction
and     al,7             ;Level computed for Temp
range
and     bh,10000000h     ;direction
mov     ah,0             ;Good read?
jne     LeaveDownCount? ;No, leave it alone
/
/      This is where we do some thermal management
/      Hold ah value or reset it as needed...
/
mov     bh,10000000h     ;$CST?
jne     NotTX_CST        ;$pp:

```

EXHIBIT I-2

EXHIBIT V-I

A sample

Temperatures and control signals are returned in CMOS storage area that is read by CMOSRead program

(A) ...sampling a temperature associated with the operation of a processing unit within said apparatus

Implementation functional
For protpe and patent purposes
By 9/15/1994

17. (Previously presented) An apparatus, comprising:
means for sampling a temperature associated with the operation of a processing unit within said apparatus; (A)

means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said processing unit; (B) and

means for using said prediction for automatic control of temperature within said apparatus. (C)

```

cmp     al,00h           ;Time to read data from I2C
je      GoRSThermalRead
shr     al,2
dec     al
and     ah,NOT 10h       ;Keep 'cheat' stuff
shl     al,2
or      ah,al            ;New value
jap     WriteDownCount?

```

GoRSThermalRead:

```

;
; Try for a Thermal Management hit: return time count = 0
;
then
; we had one, also we need to leave it along.
;

```

```

call    UpdateTemperature ;do it
mov     al,3ah
call    CMOSRead          ;Read Temperature byte
mov     al,ah
and     ah,00h            ;Just the time and level
;
; please
mov     bh,al
and     al,7              ;Get the direction
; level computed for keep
range   and     bh,11000000b ;Direction
;
;
cmp     ah,0              ;Good read?
jne     LeaveDownCount?   ;No, leave it along

```

```

; This is where we do some thermal management
; Hold ah value or reset it as needed...
;

```

```

cmp     bh,11000000b      ;CSC?
jne     ROTTR_OSC         ;No!

```

Looking at direction,
prediction
Dependent on
SetTrange and storing
value in CMOS for this
read.

(B) ... responsive to said sampled
temperature, for predicting future
temperature associated with the
operation of said processing unit

Implementation functional
For protyle and patent purposes
By 9/15/1994

EXHIBIT I-2

EXHIBIT V-2

17. (Previously presented) An apparatus, comprising:
means for sampling a temperature associated with the operation of a processing unit within said apparatus; (A)

means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said processing unit; (B) and

means for using said prediction for automatic control of temperature within said apparatus. (C)

```

SetRange:
    mov    al, cx          ;Al has temp back: an index
    mov    cx, 7           ;cx = loop count

ScanRange:
    mov    bx, cx
    add    bx, ax          ;Over index for an or dx
    cmp    al, byte ptr ds:[TempRange-bx]
    js     FoundRange      ;Overrange number found
    loop   ScanRange

FoundRange:
    ;overrange number found

    mov    al, 39h        ;Read Keyboard channel
    cld
    call    CmosRead
    mov    si, ah
    and    si, 1
    and    ax, 000h        ;Upper direction trend value
    cmp    al, al          ;Value of CMOS temp
    je     RangeStable     ;Stable process, same range
    js     RangeUpward     ;New range is greater than
    old one

    ;Range is downward trend
    cmp    ax, 10000000h    ;Last one upward?
    je     RangeStable     ;Yes, found one

    jmp     short AllRange

RangeUp:
    mov    cx, 000h        ;BPC flag
    jmp     short AllRange

RangeStable:
    mov    cx, 00h
    jmp     short AllRange

RangeUpward:
    cmp    ax, 01000000h    ;Last one Downward?
    je     RangeUp
    mov    cx, 10
  
```

```

AllRange:
    or     cx, 1           ;Range and range keep track
    mov    dx, 0h
    mov    al, 1ah        ;Write that I am here
    out    dx, dx
    cld
    cld

ClearKeyChannel:
    mov    dx, 000700h    ;Free channel
    mov    cx, 10000000h  ;Mask to write
    call    CmosWrite
    ;bit updated

    mov    cx, 0h         ;1-10-stay
    pop    dx             ;1-10-100V
    pop    dx             ;1-10-100V

    jmp     ;Restore status and
  
```

EXHIBIT V-3

(B) ... responsive to said sampled temperature, for predicting future temperature associated with the operation of said processing unit

Prediction based on trends

EXHIBIT V-3

EXHIBIT V-3

17. (Previously presented) An apparatus, comprising:
 means for sampling a temperature associated with the operation of a processing unit within said apparatus; (A)

means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said processing unit; (B) and

means for using said prediction for automatic control of temperature within said apparatus. (C)

```

=====
:      OSC, so set the temp level up by one
:
:      mov     bh,00000000b      ;Force downward
:      cmp     al,7              ;Already at max?
:      je      NotTR_OSC         ;yep, leave alone
:      inc     al                ;force level temp up by one
:
: NotTR_OSC:
=====

```

EXHIBIT I-3

```

=====
:      Time needs to be set based on T Level
:
:      mov     ah,7              ;Max available
:      sub     ah,al             ;7-7 = 0 so watch it!
:      cmp     ah,0
:      jne     NotBig1          ;Not zero
:      inc     ah               ;Look at every minute
:      NotBig1:shl     ah,2      ;Align the time constant
:      or      ah,bh            ;Align the direction
:      or      ah,al            ;Align the TRange
:      mov     bl,al             ;TRange
:      mov     bh,0             ;Upper index.
=====

```

```

=====
: (B) ... responsive to said sampled
: temperature, for predicting future
: temperature associated with the
: operation of said processing unit
=====

```

Implementation functional
 For protection and patent purposes
 By 9/15/2004

EXHIBIT V-4

17. (Previously presented) An apparatus, comprising:
means for sampling a temperature associated with the operation of a processing unit within said apparatus; (A)

means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said processing unit; (B) and

means for using said prediction for automatic control of temperature within said apparatus. (C)

TRange, direction, and time - sets auto control

```
;
;      OSC, so set the temp level up by one
;
mov     bh,00000000b      ;force downward
cmp     al,7              ;Already at max?
je      NotTR_OSC         ;yes, leave alone
inc     al                ;force level temp up by one
NotTR_OSC:
```

EXHIBIT I-3

```
;      Time needs to be set based on T Level
;
mov     ah,7              ;Max available
sub     ah,al              ;7-7 = 0 so watch it!
cmp     ah,0
jne     NotSigZ           ;Not zero
inc     ah                ;Look at every minute
NotSigZ:shl     ah,3       ;Align the time constant
or      ah,bh             ;Align the direction
or      ah,al             ;Align the TRange
mov     bl,al             ;TRange
mov     bh,0              ;Upper index.
```

(C) ... using said prediction for automatic control of temperature within said apparatus

EXHIBIT V-5

Implementation functional
For prototype and patent purposes
By 9/15/1994

means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said processing unit; (B) and means for using said prediction for automatic control of temperature within said apparatus. (C)

[illegible][illegible]

Note: The Macro "FDEF" was added on 8-3-95 because This code was used for another Product also called lilyd. The original code that was Working by 9/15/94 is there, the Macro for lilyd does not have Any code generation as of yet Here since it was not written for The new product. At facter processors were added to lilyd products, the tables changed to under them also (see 4.485.5.11-95)

[illegible]

EXHIBIT V-6

implementation functional
For prototype and patent purposes
By 9/15/1994

Claim 18

18. (Previously presented) An apparatus, comprising:

means for sampling a temperature associated with the operation of said apparatus; (A)

means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said apparatus; (B) and means for using said prediction for automatic temperature control within said apparatus. (C)

```

*****
cmp    al,0x0             ;Time to read data from KB?
je     CMOSThermalRead
mov     al,7
dec     al
and     ah,NOT 10h         ;Keep the old stuff
shl     al,2
or      ah,al              ;New value
jap     WriteDownCountT

CMOSThermalRead:
;
;   Try for a Thermal Management hit: return time count = 0
;   then we can use it. If we need to reset it along.
;
call    UpdateTemperature    ;Do it
mov     al,3ah
call    CMOSRead             ;Read Temperature byte
mov     ah,0h                ;Reset the time and level
please
mov     bh,41                ;Get the direction
and     al,7                 ;Level computed for Temp
rsh     bh,11000000b         ;Direction

cmp     ah,0                 ;Good read?
jne     LeaveDownCountT      ;Nop, leave it along

;   This is where we do some thermal management
;   Hold ah value or reset it as needed...
;
cmp     bh,11000000b         ;Reset
jne     NotTR_OSC            ;Nop!

```

A sample

Temperatures and control signals are returned in CMOS storage area that is read by CMOSRead program

(A) ...sampling a temperature associated with the operation of a processing unit within said apparatus

Implementation functional
For prototype and patent purposes
By 9/15/1994

EXHIBIT I-2

EXHIBIT V-7

18. (Previously presented) An apparatus, comprising:
 means for sampling a temperature associated with the operation of said apparatus; (A)
 means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said apparatus; (B) and means for using said prediction for automatic temperature control within said apparatus. (C)

```

cmp     al,00h           ;Time to read data from FB?
je      DoNTThermalRead
shr     al,1
dec     al
and     ah,NOT 00h       ;Keep theold stuff
shl     al,1
or      ah,al            ;New value
jap     WriteDownCountT

```

DoNTThermalRead:

```

;
; Try for a Thermal Management Alert: return time count = 0
; when
; we had one, else we need to leave it along.
;

```

```

call    UpdateTemperatures ;Do it
mov     al,10h
call    CMOSRead           ;Read Temperature byte
;      ah,ah               ;Direction,Level,Level
and     ah,10h            ;Just the time and level
please
mov     bh,al              ;Set the direction
and     al,7               ;Level computed for Temp
range
and     bh,11000000h       ;Direction

```

```

cmp     ah,0              ;Good read?
jne     LeaveDownCountT    ;No, leave it along

```

```

; This is where we do some thermal management
; Hold an value or reset it as needed...
;

```

```

cmp     bh,11000000h       ;CMC7
jne     NotCR_CSC          ;No!

```

Looking at direction,
 prediction
 Dependent on
 SetTrange and storing
 value in CMOS for this
 read.

(B) ... responsive to said sampled
 temperature, for predicting future
 temperature associated with the
 operation of said apparatus

Implementation functional
 For protyle and patent purposes
 By 9/15/1994

EXHIBIT I-2

EXHIBIT V-8

18. (Previously presented) An apparatus, comprising:

means for sampling a temperature associated with the operation of said apparatus; (A)

means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said apparatus; (B) and means for using said prediction for automatic temperature control within said apparatus. (C)

```

SetRange:
    xchg    al,cl          ;(A) has temp back; exch index
    mov     cx,7           ;cx = loop count

ScanRange:
    xch     dx,cx
    add     bl,ah          ;Over index for ac or dc
    cmp     al,byte ptr ds:[TempRange+bx]
    jg      FoundRange    ;New range number found
    loop    ScanRange

FoundRange:
    ;New range number found
    ;-----
    mov     al,39h        ;Send Keyboard channel
    stc     flag
    call    CmdRead
    mov     cl,ah
    and     cl,2          ;Is hot Temperature range
    and     ah,00fh       ;Upper direction trend value
    cmp     cl,al         ;Value of cmd read
    je      RangeStable   ;Stable process, same range
    je      RangeUpward   ;New range is greater than
    ;old one
    ;
    ;Range is downward trend
    cmp     ax,10000000h   ;Is state upward?
    js      RangeStable   ;Yes, found old
    mov     ch,01h
    jmp     short AllRange

RangeStable:
    mov     ch,00h       ;Stc flag
    jmp     short AllRange

RangeUpward:
    cmp     ah,10000000h   ;Is state downward?
    js      RangeStable   ;Yes, has found
    mov     ch,10
    
```

```

AllRange:
    or      ch,cl         ;Range and range temp trend
    mov     ah,cl
    mov     al,3ah        ;Temp char 1, dir temp 1
    ;-----
    jmp     CmdWrite

ClearingTempChannel:
    mov     ax,0007h      ;New channel
    mov     bx,10000000h   ;Ready to write
    call    CmdWriteTemp   ;It updated
    mov     dx,0
    pop     bx
    pop     ax
    jmp     RestoreStatus ;Restore status and
    
```

(B) ... responsive to said sampled temperature, for predicting future temperature associated with the operation of said apparatus

Prediction based on trends

18. (Previously presented) An apparatus, comprising:

means for sampling a temperature associated with the operation of said apparatus; (A)

means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said apparatus; (B) and means for using said prediction for automatic temperature control within said apparatus. (C)

```

;-----
;      OSC, so set the temp level up by one
;-----
mov     bh,00000080h      ;Force downward
cmp     al,7              ;Already at max?
ja      NotTR_OSC         ;yep, leave alone
inc     al                ;force level temp up by one
NotTR_OSC:
;-----

```

EXHIBIT I-3

```

;-----
;      Time needs to be set based on ? Level
;-----
mov     ah,7              ;Max available
sub     ah,al             ;?-7 = 0 so watch in!
cmp     ah,0
jne     NotBigZ           ;Not zero
inc     ah               ;Look at every minute
NotBigZ:shl     ah,2       ;Align the time constant
or      ah,bh             ;Align the direction
or      ah,al             ;Align the TRange
mov     bl,al             ;TRange
mov     bh,0              ;Upper index.
;-----

```

(B) ... responsive to said sampled temperature, for predicting future temperature associated with the operation of said apparatus

Implementation functional
For prototype and patent purposes
By 9/15/1994

EXHIBIT V-10

18. (Previously presented) An apparatus, comprising:

means for sampling a temperature associated with the operation of said apparatus; (A)

means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said apparatus; (B) and means for using said prediction for automatic temperature control within said apparatus; (C)

TRange, direction, and time - sets auto control

OSC, so set the temp level up by one

```
mov     bh,00000000b      ;force downward
cmp     al,7               ;Already at max?
je      NotTR_OSC         ;yes, leave alone
inc     al                 ;Force level temp up by one
```

NotTR_OSC:

EXHIBIT I-3

Time needs to be set based on T Level

```
mov     ah,7               ;Max available
sub     ah,al              ;7-7 = 0 no watch (t)
cmp     ah,0
jne     NotBigZ            ;Not zero
inc     ah                 ;Look at every minute
NotBigZ:shl     ah,3        ;Align the time constant
or      ah,bh              ;Align the direction
or      ah,al              ;Align the TRange
mov     bl,al              ;TRange
mov     bh,0               ;Upper index.
```

(C) ... using said prediction for automatic control of temperature within said apparatus

EXHIBIT V-11

Implementation functional
For prototype and patent purposes
By 9/15/1994

means for sampling a temperature associated with the operation of said apparatus; (A) means, responsive to said sampled temperature, for predicting future temperature associated with the operation of said apparatus; (B) and means for using said prediction for automatic temperature control within said apparatus.(C)

[illegible]

Note:
This is original code that
was present in FCC and
UL code or before
9/15/94 – IFDEF zzllilyp
was added on 6-3-95 to
delineate original code
from any new code added
later for IFDEF zzllilyd

[illegible]

Implementation functional
For prototype and patent purposes
By 9/15/1934

Claims 19 and 20

19. (Previously presented) The apparatus of Claim 17, including means for user modification of said temperature predictions. (D)

20. (Previously presented) The apparatus of Claim 18, including means for user modification of said temperature predictions. (D)

Auto/on/off set by user in SETUP

Implementation functional
For prototype and patent purposes
By 3-24-1995

Smart range coded added 3-12-95vw
Allow user to select which range of thermal management he
wants
Power Saving = ON --DC range
OFF --AC range
AUTO --If AC operation, using AC range
--If DC operation, using DC range

EXHIBIT I-7

(D) The apparatus ... including means for user modification of said
temperature predictions

3-24-95 Added Auto/On/off selection

mov al,60h
call CmosRead ;Get Auto/On/Off Selection
shl rax,6

Note: this feature was added after code was converted to ROM based needed for production as an enhancement to technology in Mar 1995. Dischler did NOT provide auto selection by user.

EXHIBIT V-13

Claim 21

21. (Previously presented) An apparatus, comprising:

means for sampling a temperature within said apparatus (A) and, using said sampled temperature at least once as a starting point, (E) predicting future changes in said temperature; (B) and means, responsive to said means for sampling and predicting, for automatically adjusting the processing speed of a processing unit by modifying a clock signal utilized by the processing unit, (C) to maintain said temperature within said apparatus below a selected reference temperature. (F)

```

*****
cmp     al,0fh                ;Time to read data from Y3?
je      DoXBThermalRead
sd      al,7
dec     al
and     ah,NOT 1ah           ;Keep the old stuff
shl     al,3
or      ah,al                ;New value
jap     WriteDownCountT

DoXBThermalRead:
;
;      Try for a Thermal Management bit: return time count = 0
;
then
;      we can read, since we need to read it along.
;
call    UpdateTemperature    ;do it
mov     si,3ah
call    CMOSRead             ;Read Temperature byte
;*****
and     ah,3ah               ;Just the time and level
pleasr  mov     bh,al         ;Get the direction
and     al,7                 ;level computed for Temp
range   and     bh,11000000b  ;direction

cmp     ah,0                 ;Good read?
jne     LeaveDownCountT     ;Noop, leave it along

;
;      This is where we do some thermal management
;      Hold ah value or reset it as needed...
;
cmp     bh,11000000b         ;OSCT
jne     NoVTR_OSC           ;Noop:

```

EXHIBIT 1-2

EXHIBIT V-14

A sample

Temperatures and control signals are returned in CMOS storage area that is read by CMOSRead program

(A) ... sampling a temperature within said apparatus

Implementation functional
For protpe and patent purposes
By 9/15/1994

21. (Previously presented) An apparatus, comprising:

means for sampling a temperature within said apparatus (A) and, using said sampled temperature at least once as a starting point, (E) predicting future changes in said temperature; (B) and means, responsive to said means for sampling and predicting, for automatically adjusting the processing speed of a processing unit by modifying a clock signal utilized by the processing unit, (C) to maintain said temperature within said apparatus below a selected reference temperature. (F)

```
...
    sfp    al,00h                ;Time to read data from KB
    je     DoK8ThermalRead
    shr    al,3
    dec    al
    and    ah,NOT 00h           ;Keep the old stuff
    shl    al,3
    or     ah,al                ;New value
    jmp     WriteOpenCountT
```

DoK8ThermalRead:

```
...
;
; Try for a Thermal Management hit: return time count + 3
;
Then
```

we had one, and we need to leave it alone.

```
...
    call    UpdateTemperature    ;Do it
    mov     al,10h              ;Read Temperature byte
    call    CMOSRead             ;Get CMOS/Min/Max
    mov     al,00h              ;Just the time and level
    and     ah,10h
;
; please
    mov     bh,al               ;Get the direction
    and     al,7                ;Level computed for Temp
;
; range
    and     bh,11000000h        ;direction
;
    cmp     ah,0                ;Good read?
    jne     LeaveOpenCountT     ;No, leave it alone
```

This is where we do some thermal management
Hold ah value or reset it as needed...

```
...
    cmp     bh,11000000h        ;OSC?
    jne     WriteOSC            ;No!
```

EXHIBIT I-2

Valid sampled temperature

(E) using said sampled temperature at least once as a starting point

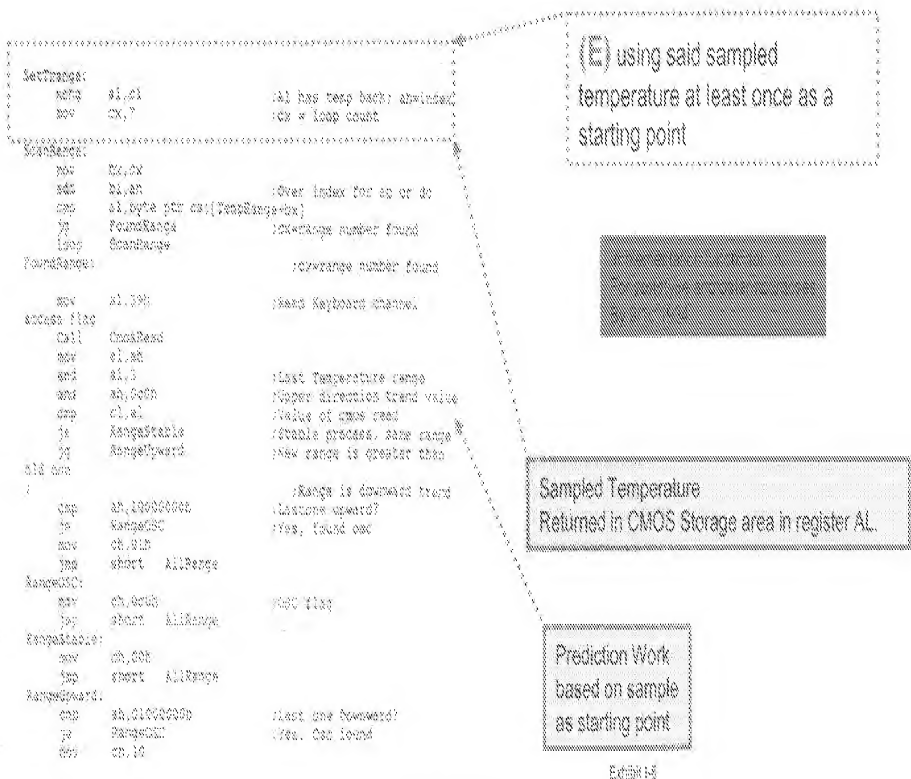
Sampled Temperature
Returned in CMOS Storage area.
Read CMOS storage to fetch sample point
(also returns "trends" found with sample point for later prediction)

Implementation functional
For prototyping and patent purposes
By 9/15/1994

EXHIBIT V-15

21. (Previously presented) An apparatus, comprising:

means for sampling a temperature within said apparatus (A) and, using said sampled temperature at least once as a starting point, (E) predicting future changes in said temperature; (B) and means, responsive to said means for sampling and predicting, for automatically adjusting the processing speed of a processing unit by modifying a clock signal utilized by the processing unit, (C) to maintain said temperature within said apparatus below a selected reference temperature. (F)



21. (Previously presented) An apparatus, comprising:

means for sampling a temperature within said apparatus (A) and, using said sampled temperature at least once as a starting point, (E) predicting future changes in said temperature; (B) and means, responsive to said means for sampling and predicting, for automatically adjusting the processing speed of a processing unit by modifying a clock signal utilized by the processing unit, (C) to maintain said temperature within said apparatus below a selected reference temperature. (F)

```

cmp     al,00h           ;Time to read data from A3?
je      DoA3ThermalRead
shr     al,7
dec     al
and     ah,NOT 10h       ;Keep thead stuff
shl     al,3
or      ah,al            ;New value
jap     WriteDownCountT

```

DoA3ThermalRead:

```

; Try for a Thermal Management hit: return time count > 6
then
    we had one, else we need to leave it along.

```

```

call    UpdateTemperature ;DO it
mov     al,10h
call    CMOSRead          ;Read Temperature here
;ah,al ;direction, time, data
and     ah,00h            ;Just the time and data

```

```

; please
mov     bh,al             ;Get the direction
and     al,7              ;level computed for Temp
range
and     bh,11000000b      ;Direction

```

```

cmp     ah,0              ;Good read?
jne     LeaveDownCountC   ;Nope, leave it along.

```

```

; This is where we do some Thermal Management
; Hold ah value or reset it as needed...

```

```

cmp     bh,11000000b      ;ASC?
jbe     NotTK_ASC         ;Nope

```

Looking at direction,
prediction
Dependent on
SetTrange and storing
value in CMOS for this
read.

(B) ... predicting future changes in said
temperature

Implementation functional
For protye and patent purposes
By 9/15/1994

EXHIBIT 1-2

EXHIBIT V-17

21. (Previously presented) An apparatus, comprising:

means for sampling a temperature within said apparatus (A) and, using said sampled temperature at least once as a starting point, (E) predicting future changes in said temperature; (B) and means, responsive to said means for sampling and predicting, for automatically adjusting the processing speed of a processing unit by modifying a clock signal utilized by the processing unit, (C) to maintain said temperature within said apparatus below a selected reference temperature. (F)



21. (Previously presented) An apparatus, comprising:

means for sampling a temperature within said apparatus (A) and, using said sampled temperature at least once as a starting point, (E) predicting future changes in said temperature; (B) and means, responsive to said means for sampling and predicting, for automatically adjusting the processing speed of a processing unit by modifying a clock signal utilized by the processing unit, (C) to maintain said temperature within said apparatus below a selected reference temperature. (F)

```

: ~~~~~
:      OSC, so set the temp level up by one
:
:      mov     bh,00000000b      ;Force downward
:      cmp     al,7              ;Already at max?
:      je      NotTR_OSC        ;yes, leave alone
:      inc     al                ;Force level temp up by one
: NotTR_OSC:
: ~~~~~
EXHIBIT I-3  :      Time needs to be set based on T level
:
:      mov     ah,7              ;Max available
:      sub     ah,al             ;7-7 = 0 so watch it!
:      cmp     ah,0              ;Not zero
:      jne     NotBig2          ;Look at every minute
:      inc     ah                ;Align the time constant
:      NotBig2:shl     ah,1      ;Align the direction
:      or      ah,bh            ;Align the TRange
:      or      ah,al            ;TRange
:      mov     bl,al            ;Upper index.
:      mov     bh,0

```

(B) ... predicting future changes in said temperature

EXHIBIT V-19

Implementation functional
For prototype and patent purposes
By 9/15/1994

21. (Previously presented) An apparatus, comprising:

means for sampling a temperature within said apparatus (A) and, using said sampled temperature at least once as a starting point, (E) predicting future changes in said temperature; (B) and means, responsive to said means for sampling and predicting, for automatically adjusting the processing speed of a processing unit by modifying a clock signal utilized by the processing unit, (C) to maintain said temperature within said apparatus below a selected reference temperature. (F)

TRange, direction, and time - sets auto control

```

:
:      OSC, so set the temp level up by one
:
mov     bh,00000000b      ;force downward
cmp     al,7              ;Already at max?
je      NotTR_OSC         ;yes, leave alone
inc     al                ;force level temp up by one
NotTR_OSC:

```

EXHIBIT I-3

Time needs to be set based on f Level

```

:
:      Time needs to be set based on f Level
:
mov     ah,7              ;Max available
sub     ah,al             ;7-7 = 0 so watch it!
cmp     ah,0
jne     NotBig2           ;Not zero
inc     ah               ;Clock at every minute
NotBig2:shl     ah,7      ;Align the time constant
or      ah,bh            ;Align the direction
or      ah,al            ;Align the TRange
mov     bl,al            ;TRange
mov     bh,0            ;Upper index.

```

(C) ... responsive to said means for sampling and predicting, for automatically adjusting the processing speed of a processing unit by modifying a clock signal utilized by the processing unit.

means for sampling a temperature within said apparatus (A) and, using said sampled temperature at least once as a starting point, (E) predicting future changes in said temperature; (B) and means, responsive to said means for sampling and predicting, for automatically adjusting the processing speed of a processing unit by modifying a clock signal utilized by the processing unit, (C) to maintain said temperature within said apparatus below a selected reference temperature. (F)

(C) ... responsive to said means for sampling and predicting, for automatically adjusting the processing speed of a processing unit by modifying a clock signal utilized by the processing unit,

```

:
:      Need to setup the Base Value based on current Page#
:
:      push    bx
:
:      TEST     cx, cx
:
:      jnz     1508:1509-150E set Base
:
:      mov     ah, byte ptr [WordsTable+bx]
:
:      mov     di, 1545
:
:      ; Index register to write
:
:      call    CopyWrite
:
:

```

Modifies clock signal – that controls temperature of apparatus. Register BX indexes TDozeTable for auto-selection and auto control.

[illegible]

Note:
This is original code that
was present in FCC and
UL code or before
01/15/94 - IFDEF zzzzlyc
was added on 6-3-95 to
delineate original code
from any new code added
later for IFDEF zzzzlyd

Note: The Macro "FDEF" was added on 6-3-95 because This code was used for another Product also called *fllyd*. The original code that was Working by 9/15/94 is there, the Macro for *fllyd* does not have Any code generation as of yet Here since it was not written for The new product. As faster processors were added to *fllyd* products, the latencies changed to under them also (see 4.48D 5.11-95)

```

*****
T00767896
dd      ORG          : Disabled
dd      SEC         : 3 sec's
dd      PWR         : 1 PWR
dd      ZEN         : 12Z XCC
dd      ZEN,ORG,ZOB,ZOB,ZOB : C-ENR H-11-95
dd      ID          : 14 sec
*****

```

2000 143

Implementation functional
For prototype and patent purposes
By 9/15/1994

21. (Previously presented) An apparatus, comprising:

means for sampling a temperature within said apparatus (A) and, using said sampled temperature at least once as a starting point, (E) predicting future changes in said temperature; (B) and means, responsive to said means for sampling and predicting, for automatically adjusting the processing speed of a processing unit by modifying a clock signal utilized by the processing unit, (C) to maintain said temperature within said apparatus below a selected reference temperature. (F)

(F) maintain said temperature within said apparatus below a selected reference temperature.

Set Value to keep temperature below referenced in table

```
GetRange:
  mov     al,cl          ;Al has temp back: showindex
  mov     cx,7           ;cx = loop count
```

```
ScanRange:
  mov     dx,cx          ;Over index for sc on dx
  and     bl,ah          ;Mask to write
  cmp     al,byte ptr ds:[TempRange+bx]
  jg      foundRange     ;Range number found
  loop    ScanRange
```

```
foundRange:
  ;(dx)range number found
```

```
mov     al,20h          ;Read Keyboard channel
```

```
Address (Key
  call    CmpRead
  mov     al,ah
  and     al,1           ;Last Temperature range
  and     ah,00h         ;Upper direction trend value
  cmp     cl,al          ;Value of temp read
  je      RangeStable    ;Stable process, same range
  jg      RangeUpward    ;New range is greater than
```

```
old one
;
; (Range is downward trend
```

```
cmp     ah,00h0000h     ;Restore upward?
jg      RangeUpward    ;Yes, found new
```

```
mov     short  AllRange
```

```
RangeSet:
  mov     ch,00h        ;Set flag
```

```
mov     short  AllRange
```

```
RangeStable:
  mov     ch,00h
```

```
mov     short  AllRange
```

```
RangeUpward:
  cmp     ah,01000000h   ;Last one downward?
```

```
je      RangeSet       ;Yes. One found
```

```
mov     ch,10
```

```
AllRange:
  or      ch,cl          ;Range and Range temp trend
```

```
mov     ah,ah
mov     al,ah           ;Write what I bit today ?
```

```
hlt     for status complete
call    CmpWrite
```

```
WriteKeyChannel:
  mov     ax,0000h       ;Free channel
  mov     bl,00000000h   ;Mask to write
  call    CmpWriteKey    ;Bit update
```

```
DisplayKeyChannel:
  mov     dx,0           ;16-bit show
  mov     cx,0           ;16-bit show
  mov     bx,0           ;16-bit show
```

```
mov     dx,0           ;Restore status and
```

EXHIBIT V-8

TempRange	Label	Type
GetTempRange	Label	Type
00	00h	Level 0
01	01h	Level 1
02	02h	Level 2
03	03h	Level 3
04	04h	Level 4
05	05h	Level 5
06	06h	Level 6
07	07h	Level 7

AllTempRange	Label	Type
00	00h	Level 0
01	01h	Level 1
02	02h	Level 2
03	03h	Level 3
04	04h	Level 4
05	05h	Level 5
06	06h	Level 6
07	07h	Level 7

UpdateTemperature end

EXHIBIT V-9

EXHIBIT V-22

Claim 23

23. (Previously presented) The apparatus of Claim 21, wherein said adjustments are accomplished within the processing unit cycles and do not affect the user's perception of performance. (G)

```

cmp     $0,$0             #Time to read data from vst
je      $PC,$PC            ~~~~~
sbr     $0,$0
dec     $0
and     $0,$0x1000000      #Keep rawold stuff
srl     $0,$0
or      $0,$0
jmr     $0,$0x100000000    #New value
~~~~~

RequiemRead:
:
:
:      Try for a Thermal Management hit: return time enough
then
:
:      We had one, since we need to leave it alone.
:
call    UpdateTemperature  #OK it
mov     $0,$0
call    CheckRead          #Read Temperature byte
mov     $0,$0             #Direction/Time/Level
and     $0,$0             #Start the time and level
please
mov     $0,$0             #Get the direction
and     $0,$0             #Cancel computed for Temp
range
sng     $0,$0x00000000    #Duration
~~~~~
mov     $0,$0             #Clear readF
jmr     $0,$0             #No, leave it alone
~~~~~

This is where we do some thermal management
hold $0 value or reset it as needed...

cmp     $0,$0x00000000    #000F
jne     $PC,$PC            skip
~~~~~

```

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

Sample interval selected as to not be detected by user or affect user performance

```

    pop    ax
    writebackout:
    mov     al, 130
    call    CIOwrite

```

[illegible]

70	90%	: disabled
80	10%	: 1 sec
90	1%	: 1 sec
100	0%	: 1/2 sec
110	10%, 20%, 30%, 40%	: 1.4 sec - 1-10
120	50%	: 1/4 sec

2002年 1-3

(G) ... said adjustments are accomplished within the processing unit cycles and do not affect the user's perception of performance.

FOR MORE INFORMATION:

Claim 74

74. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (P)

```

.....
(T) a temperature controller ...
.....

DoKBThermalRead:
;
; Try for a Thermal Management hit: return time count = 0
then
; we had one, else we need to leave it along.
.....
call UpdateTemperature ;Do it
mov     al,Jan
call    CMOSRead        ;Read Temperature byte
mov     al,ah            ;Direction/Time/Level
and     ah,30h           ;Just the time and level
;
; please
mov     bh,al            ;Get the direction
and     al,7             ;Level computed for Temp
range
and     bh,11000000b     ;Direction

cmp     ah,0             ;Good read?
jne     LeaveDownCountT  ;No, leave it along

;
; This is where we do some thermal management
; Hold ah value or reset it as needed...
;
cmp     bh,11000000b
jne     NotTR_OSC

```

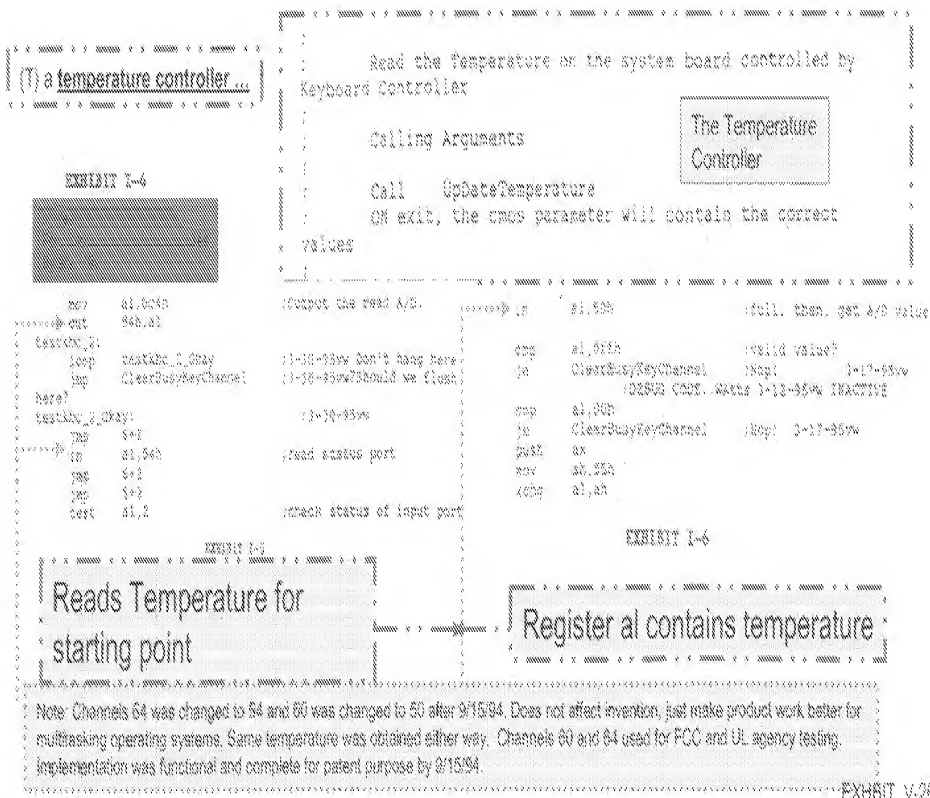
DoKBThermalRead
calls
Temperature Controller
UpdateTemperature

NotTR_OSC
For
B:30

74. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (P)



74. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (P)

```

cmp    al,00h           ;Time to read data from K37
je     DoK37ThermalRead
shr    al,3
dec    al
and    ah,NOT 10h       ;Keep the old stuff
shl    al,3
or     ah,al             ;New value
jnp    WriteDownCount?

```

DoK37ThermalRead:

```

;
; Try for a Thermal Manager hit: return time count = 0
;
Then
    we hit CAN, like we need to leave it alone.

```

```

;
;
call    UpdateTemperature    ;Do it
mov     al,3ah
call    CMOSRead             ;Read Temperature byte w
; al,00h                    ;Time/Temp/Level
and     ah,10h               ;Just the time and level
please
mov     bh,al                ;Get the direction
and     al,7                 ;Level computed for temp
range
and     bh,11000000h         ;Direction
cmp     ah,0                 ;Good read?
jne     LeaveDownCount?      ;Nop, leave it alone
;
; This is where we do some thermal management
; Hold ah value or reset it as needed...
;
;
cmp     bh,11000000b         ;OSOT
jne     NotTR_OSC            ;Nop!

```

(E) ... using said sampled temperature at least once as a starting point

Sampled Temperature
Returned in CMOS Storage area.
Read CMOS storage to fetch sample point
(also returns "trends" found with sample point for later prediction)

Valid sampled temperature

EXHIBIT I-2

Implementation functional
For prototyping and patent purposes
By 9/15/1994

74. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (P)

```

SetRange:
    mov     al,01          ;al has temp back; shwided
    mov     cx,7           ;cx = loop count

ScanRange:
    mov     dx,cx
    add     di,4h          ;Over index for an or do
    cmp     al,byte ptr ds:[TempRange+dx]
    jz      FoundRange    ;CX=range number found
    loop    ScanRange

FoundRange:
    ;overrange number found

    mov     al,00h        ;Read Keyboard channel

KeyPressFlag:
    call    CrossPend
    mov     al,ah
    and     al,1
    and     ax,000h        ;Last Temperature range
    mov     di,01h        ;Upper direction trend value
    cmp     di,01h        ;Value of temp trend
    je      RangeStable   ;Stable process, same range
    jz      RangeUpward   ;New range is greater than

old one
    ;range is downward trend
    ;last one upward?
    ;yes, found one

    cmp     sh,10000000h
    jz      RangeOld
    mov     ch,01h
    jmp     short AllRange

RangeOld:
    mov     ch,00h
    jmp     short AllRange

RangeStable:
    mov     ch,00h
    jmp     short AllRange

RangeUpward:
    cmp     sh,01000000h
    jz      RangeOld
    ;last one downward?
    ;yes, One found
    mov     ch,10
    
```

(E) using said sampled temperature at least once as a starting point

CMOS Storage Area
 Predicted Temperature
 B.913-42

Sampled Temperature
 Returned in CMOS Storage area in register AL.

Prediction Work
 based on sample
 as starting point

Exhibit 1-8

74. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (P)

```

cmp     al,08h           ;Time to read data from gp
je      DoKBTThermalRead
shr     al,3
dec     al
and     ah,NOT 16h       ;Keep ch0id stuff
shl     al,1
or      ah,al            ;New value
jmp     WriteDownCountT

```

DoKBTThermalRead:

```

;
; Try for a Thermal Management MTR return time count = 0
; then
; we had one, since we need to leave it along.
;

```

```

call    UpdateTemperature ;Do it
mov     al,16h
call    CMOSRead          ;Read Temperature byte
mov     ah,00             ;Direction/time/level
and     ah,180            ;Just the time and level

```

```

; please
mov     bh,al             ;Get the direction
and     al,7              ;Level computed for Temp
range   and     bh,110000000b ;Direction

```

```

cmp     ah,0              ;Good read?
jne     LeaveDownCountT   ;No, leave it along

```

```

; This is where we do some thermal management
; Hold ah value or reset it as needed...
;

```

```

cmp     bh,110000000b     ;GCC?
jne     NOTTR_GSC         ;No!

```

Looking at direction,
prediction
Dependent on
SetTrange and storing
value in CMOS for this
read.

(B) ... predicting future changes in said
temperature

Implementation functional
For prototype and patent purposes
By 9/15/1994

EXHIBIT I-2

EXHIBIT V-29

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

[illegible]

(B) ... predicting future changes in said temperature

Prediction based on trends

1998

74. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (P)

```

:      OSC, so set the temp level up by one
:
:      mov     bh,00000000b      ;Force downward
:      cmp     al,7              ;Already at max?
:      je      NotTR_OSC        ;yep, leave alone
:      inc     al                ;Force level temp up by one
:
: NotTR_OSC:
: ~~~~~

```

EXHIBIT I-3

```

:      Time needs to be set based on T Level
:
:      mov     ah,7              ;Max available
:      sub     ah,al             ;7-7 = 0 so watch it!
:      cmp     ah,0
:      jne     NotBigZ          ;Not zero
:      inc     ah               ;Look at every minute
:      NotBigZ:shl     ah,1      ;Align the time constant
:      or      ah,bh            ;Align the direction
:      or      ah,al            ;Align the TRange
:      mov     bl,al             ;TRange
:      mov     bh,0             ;Upper index.

```

(B) ... predicting future changes in said temperature

Predicting future changes
By studying trend to be downward,
Upward, stable, or oscillating.

EXHIBIT V-31

Implementation functional
For prototype and patent purposes
By 9/15/1994

74. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (P)

```

*****
DoKEThermalRead:  * (M) a clock manager ...
*****

:      Try for a Thermal Management bit: return time count = 0
then
:      we had one, else we need to leave it along.

*****
-> call    UpdateTemperature    ;do it
mov     al,ah
call    CmosRead                ;Read Temperature byte
mov     al,ah                   ;Direction/Time/Level
and     ah,16h                  ;Just the time and level
please
mov     bh,al                   ;Get the direction
and     al,?                     ;Level computed for Temp
range
and     bh,110000000b           ;Direction

cmp     ah,0                    ;Good read?
jne     LeaveDownCount?         ;No, leave it along

:
:      This is where we do some thermal management
:      Hold ah value or reset it as needed...
:
cmp     bh,110000000b           ;OSC?
jne     NotIR_OSC               ;No!

```

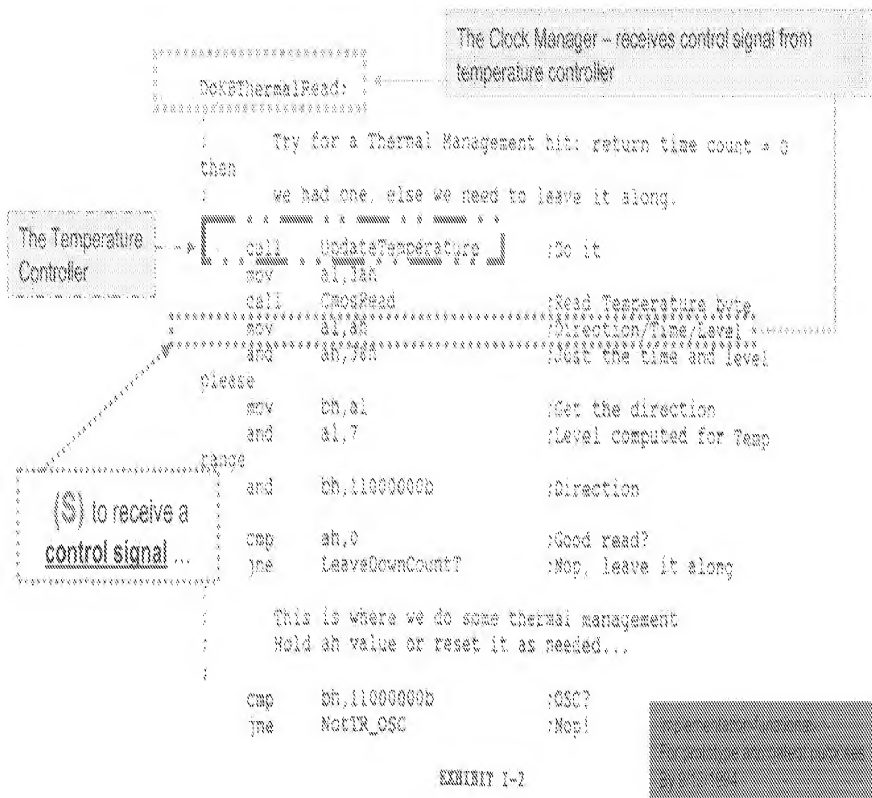
The Clock Manager – receives control signal from temperature controller

[illegible]

74. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (P)



74. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (P)

(P) ... clock manager selectively stopping clock signals ... a) said monitored temperature rises to at least a selected reference temperature ...
b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

```

DoNTThermalRead:
/
/      Try for a Thermal Management hit: return time count = 0
then
/
/      we had one, also we need to leave it along.
/
call    UpdateTemperature    ;Do it
mov     al,3ah
call    CmosRead             ;Read Temperature byte
mov     al,ah                ;Direction/Time/Level
and     ah,3fh               ;Just the time and level
please
mov     bh,al                ;Get the direction
and     al,7                 ;Level computed for Temp
range
and     bh,11000000b         ;Direction

cmp     ah,0                 ;Good read?
jne     LeaveDownCount?      ;No, leave it along
/
/      This is where we do some thermal management
/      Hold ah value or reset it as needed...
/
cmp     bh,11000000b         ;OSC?
jne     NotTR_OSC            ;No!

```

Valid Temperature
found

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (P)

(P) ... clock manager selectively stopping clock signals ... a) said monitored temperature rises to at least a selected reference temperature ...
b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

Modifies clock signal

[illegible]

22581-1

Reference Temperature

EXHIBIT V-35

Target/Source D/Temp Range	Model Labels	Time Days
500	5.7%	
500	6.4%	
500	10%	
500	11%	
500	14%	
500	14%	
500	15%	
500	16%	
Active Temp Range	Labels	Days
500	18%	
500	11%	
500	13%	
500	14%	
500	15%	
500	16%	
500	17%	
Model Temperature	Labels	

XXXXXX 1-2

Note: The Macro "IFDEF" was added on 6-3-85 because This code was used for another Product also called flyd. The original code that was Working by 6/16/84 is there, the Macro for flyd does not have Any code generation as of yet here since it was not written for The new product. As faster processors were added to flyd products, the tables changed to under them also (see 4-48b 5-11-95)

74. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (P)

(P) ... clock manager selectively stopping clock signals ... a) said monitored temperature rises to at least a selected reference temperature ...
b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

EXHIBIT I-3

```

;
;      OSC, so set the temp level up by one
;
      mov     bx,00000000b           ;force downward
      cmp     al,7                   ;Already at max?
      je      NotTR_OSC              ;yes, leave alone
      inc     al                     ;force level temp up by one
NotTR_OSC:
;
;      Time needs to be set based on T Level
;
      mov     ah,7                   ;Max available
      sub     ah,al                  ;7-7 = 0 so watch it!
      cmp     ah,0
      jna     NotBig2               ;Not zero
      inc     ah                     ;Look at every minute
      NotBig2:shl     ah,2           ;Align the time constant
      or      ah,bh                  ;Align the direction
      or      ah,al                  ;Align the TRange
      mov     Di,al                  ;TRange
      mov     Ch,0                   ;Upper index.

```

Tlevel sets time – based on acceptable level of temperature rise or fall
(direction gives rise or fall, and TRange give temperature Low and Max in range.
Acceptable rate is time and temperature based dependent on direction of trend.

Claim 75

75. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal (R)

```

.....
(T) a temperature controller ...
.....
DoKBThermalRead:
:
:       Try for a Thermal Management bit: return time count = 0
:       then
:           we had one, else we need to leave it along.
:
: ..
: .. call .. UpdateTemperature .. :Do it
: .. mov .. al,1ah
: .. call .. CmosRead .. :Read Temperature byte
: .. mov .. al,ah .. :Direction/Time/Level
: .. and .. ah,36h .. :Just the time and level
:
: please
: mov .. bh,al .. :Get the direction
: and .. al,7 .. :Level computed for Temp
: range
: and .. bh,11000000b .. :Direction
:
: cmp .. ah,0 .. :Good read?
: jne .. LeaveDownCountT .. :Nop, leave it along
:
:
:       This is where we do some thermal management
:       Hold ah value or reset it as needed...
:
:
: cmp .. bh,11000000b
: jae .. NotTR_OSC

```

DoKBThermalRead
calls
Temperature Controller:
"UpdateTemperature"

DoKBThermalRead
calls
Temperature Controller:
"UpdateTemperature"

EXHIBIT I-2

EXHIBIT V-37

75. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

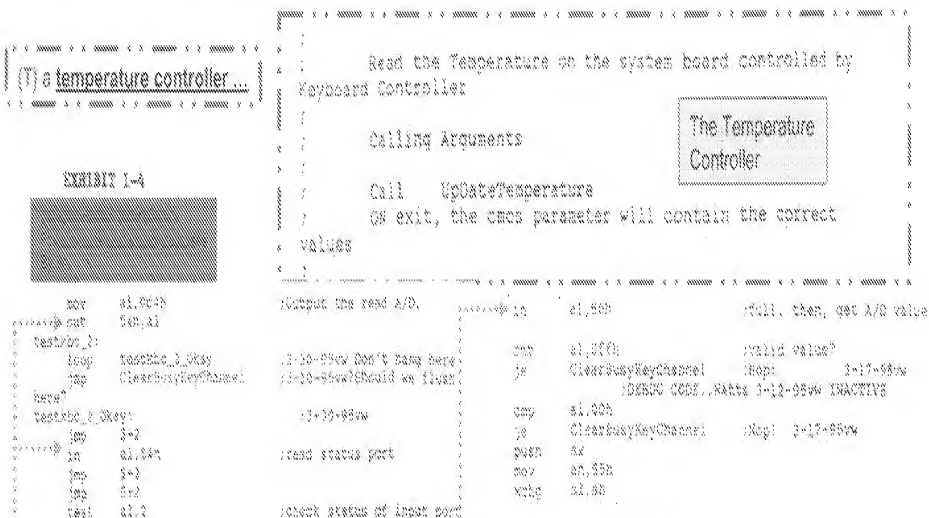


EXHIBIT I-5

Reads Temperature for starting point

EXHIBIT I-6

Register al contains temperature

Note: Channels 64 was changed to 54 and 60 was changed to 50 after 9/15/94. Does not affect invention, just makes product work better for multitasking operating systems. Same temperature was obtained either way. Channels 60 and 54 used for FCC and UL agency testing. Implementation was functional and complete for patent purpose by 8/15/94.

75. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

```

cmp    al,08h           ;time to read data from ysr
ja     DoFXTThermalRead
shr    al,1
dec    al
and    ah,NOT 18h       ;Keep theold stuff
shl    al,1
or     ah,al             ;New value
jnp    WriteDownCountT

```

DoFXTThermalRead:

```

;
; Try for a Thermal Management hit: return time count = 0
; then

```

we had "one" else we have to leave it alone.

```

call   UpdateTemperature ;do it
mov     al,18h
call   CountRead          ;Read Temperature byte w
mov     w1,ah              ;[CMOS]T0K/100/Low/1
and     ah,08h            ;Just the time and level
please
mov     bh,al              ;Get the direction
and     al,7              ;level computed for Temp
range
and     bh,11000000b       ;Direction
cmov    ah,0              ;Good read?
jnc     LeaveDownCountT   ;Nop, leave it alone

```

This is where we do some thermal management
Hold on value or reset it as needed...

```

cmp     bh,11000000b       ;OSC?
jnc     NoCTR_OSC         ;Nop!

```

EXHIBIT V-1

Valid sampled temperature

(E) ... using said sampled temperature at least once as a starting point

Sampled Temperature
Returned in CMOS Storage area.
Read CMOS storage to fetch sample point
(also returns "trends" found with sample point for later prediction)

Implementation functional
For prototype and patent purposes
By 9/15/1994

75. (Previously presented) An apparatus, comprising:

a **temperature controller (T)** for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a **clock manager (M)** adapted to receive a **control signal (S)** from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

```

SetRange:
    xchg    al,cl          ;Al has temp back; ah/index
    mov     cx,7           ;cx = loop count

FindRange:
    mov     bx,cx
    add     bl,ah          ;Over Index for sq or dc
    cmp     al,byte ptr ds:[TempRange+bx]
    jg      FoundRange
    loop    FindRange
FoundRange:
    ;overrange number found

    mov     al,0x00        ;Send Keyboard channel
    outsb   ;access flag
    call    CMOSRead
    mov     al,ah
    and     al,0
    mov     ah,0x00        ;Last Temperature Range
    mov     ah,0x00        ;Upper direction trend value
    mov     cl,ah          ;Value of CMOS read
    je      RangeStable    ;Stable process, same range
    jg      RangeUpward    ;New range is greater than
    ;Range is downward trend
    cmp     ah,0x00000000
    jg      RangeDSC       ;Last one upward?
    mov     ch,0x10
    jmp     short AllRange
RangeDSC:
    mov     ch,0x00        ;DSC flag
    jmp     short AllRange
RangeStable:
    mov     ch,0x00
    jmp     short AllRange
RangeUpward:
    cmp     ah,0x00000000
    jg      RangeDSC       ;Last one Downward?
    mov     ch,10

```

(E) using said sampled temperature at least once as a starting point

CMOS Storage area
 00000000
 00000000
 00000000
 00000000

Sampled Temperature
 Returned in CMOS Storage area in register AL.

Prediction Work
 based on sample
 as starting point

Exhibit 5

75. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

```

cmp     al,08h           ;Time to read data from K81
je      DoK8ThermalRead
shr     al,1
dec     al
and     ah,NOT 10h       ;Keep theold stuff
shl     al,1
or      ah,al            ;New value
jnp     WriteDownCountT

```

DoK8ThermalRead:

```

;
; Try for a Thermal Management hit: return time count = 0
;
then
; we had one, else we need to leave it alone.
;

```

```

call    UpdateTemperature ;Do it
mov     al,30h
call    CopsRead          ;Read Temperature byte
mov     cx,cx             ;Time/Time/Level
and     bx,30h           ;Just the time and level
; please
mov     bh,al             ;Get the direction
and     al,7             ;Level computed for Temp
range
and     bh,11000000b     ;Direction

```

```

cmp     bx,0             ;Good read?
jpe     LeaveDownCountT  ;Nop, leave it alone

```

```

; This is where we do some thermal management
; Hold ah value or reset it as needed...
;

```

```

cmp     bh,11000000b     ;Good?
jne     NotTR_Good       ;Nop!

```

EXHIBIT I-2

EXHIBIT V-41

Looking at direction,
prediction
Dependent on
SetTrange and storing
value in CMOS for this
read.

(B) ... predicting future changes in said
temperature

Implementation functional
For protyle and patent purposes
By 9/15/1994

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and
a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

(B) ... predicting future changes in said
temperature

Prediction based on trends

© 1994

75. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

EXHIBIT I-3

```

: ~~~~~
:      OSC, so set the temp level up by one
:
:      mov     bh,00000000b      ;Force downward
:      cmp     al,7              ;Already at max?
:      je      NotTR_OSC        ;yes, leave alone
:      inc     al                ;force level temp up by one
:
: NotTR_OSC:
: ~~~~~
:      Time needs to be set based on T level
:
:      mov     ah,7              ;Max available
:      sub     ah,al             ;7-7 = 0 so watch it!
:      cmp     ah,0
:      jae     NotSigZ          ;Not zero
:      inc     ah               ;Look at every minute
:      NotSigZ:shl     ah,1      ;Align the time constant
:      or      ah,bh            ;Align the direction
:      or      ah,al            ;Align the TRange
:      mov     bl,al             ;TRange
:      mov     bh,0             ;Upper index.

```

(B) ... predicting future changes in said temperature

Predicting future changes.
By studying trend to be downward.
Upward, stable, or oscillating.

EXHIBIT V-43

Implementation functional
For prototype and patent purposes
By 9/15/1994

75. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

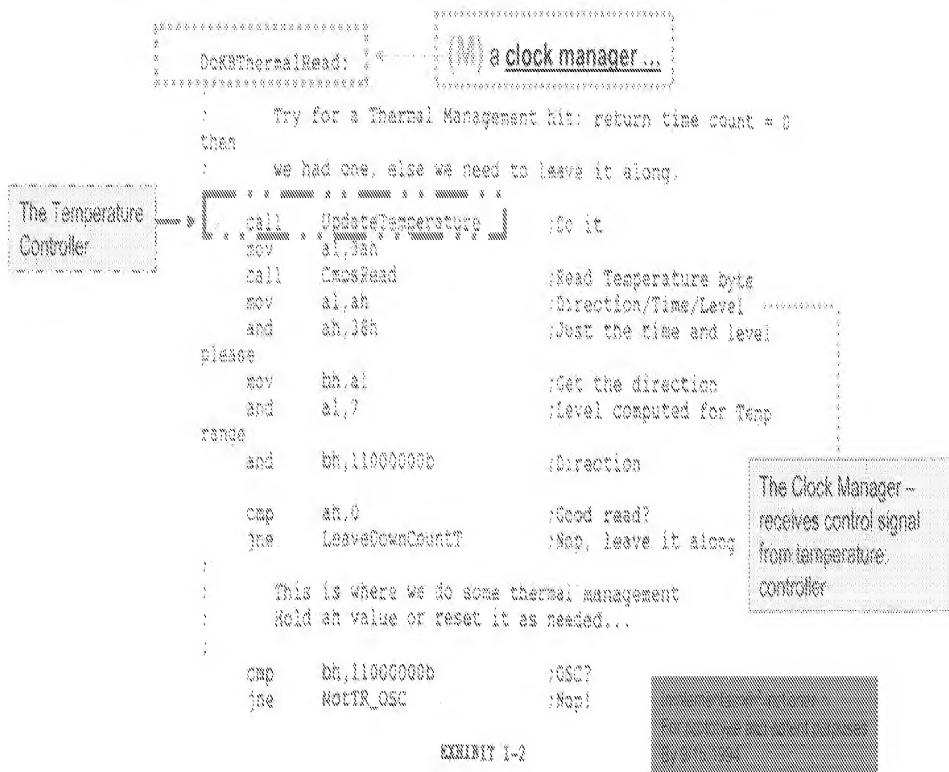


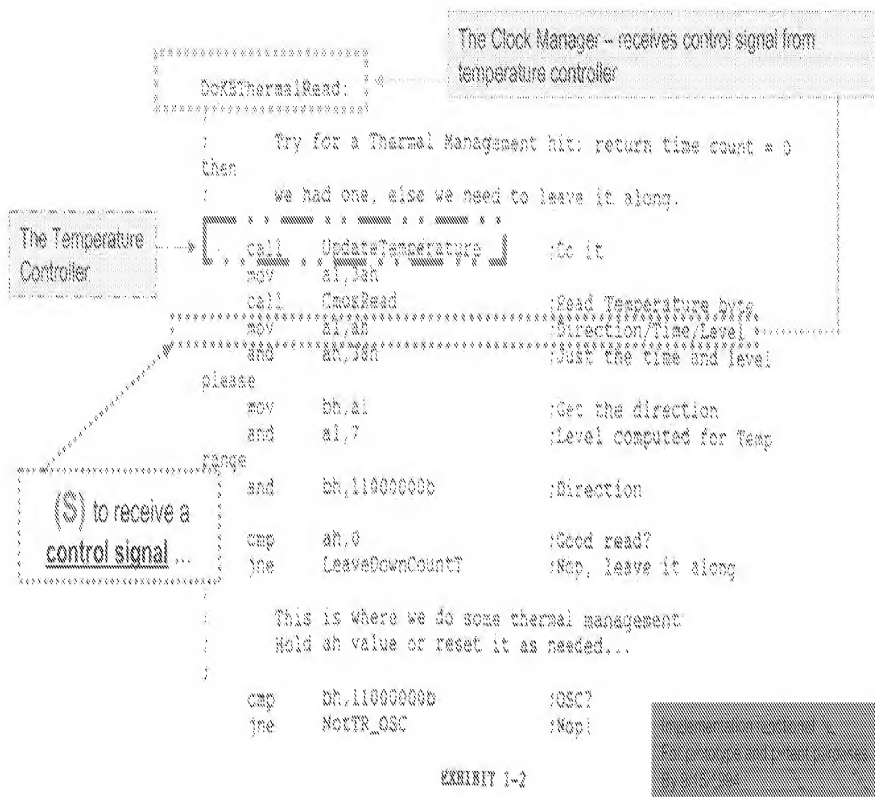
EXHIBIT I-2

EXHIBIT V-44

75. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)



75. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal, (R)

(R) ... clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

DckBThermalRead:

Try for a Thermal Management bit: return time count = 0

then

we had one, else we need to leave it along.

call UpdateTemperature ;Do it

mov al,3ah

call CmosRead ;Read Temperature byte

mov al,ah ;Direction/Time/Level

and ah,10h ;Just the time and level

please

mov bh,al ;Get the direction

and al,7 ;Level computed for Temp

range

and bh,11000000b ;Direction

cmp ah,0 ;Good read?

jne LeaveDownCountT ;Nop, leave it along

Leaves clock speed the same

This is where we do some thermal management

Hold ah value or reset it as needed...

"A 1st clock Signal"

cmp bh,11000000b ;OSC?

jne NotTR_OSC ;Nop!

Valid Temperature found, a 2nd Clock Signal if changed

EXHIBIT I-2

EXHIBIT V-46

Exhibit I-2 and Exhibit V-46
By: [Signature]

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

(R) ... clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

[illegible]

```
IRDPH assembly                                     03-08-1976 04:50 Sat Nov 1976
mov     ANOVA ptr ss:(bx+ebx*4);eax              ; ANOVA pointer
mov     al,AN             ; index register to write
CALL    WRITE
```

```

1908F 00000000          :S.08.1 6-7-98W Add date
code here
1908F 00000000

```

NOV 4X : Starts to next seg

2007 01 04
 Call Center 1

```

LDRDVS00007:
    POP     BX
    POP     AX
    POP     CX
    RET     Restore Interrupt

```

```

MoreTables:
db 200 : 200ns
db 250 : 1.2 sec
db 300 : 1.3 sec
db 350 : 1.72 sec
db 400 200, 250, 300, 350 : 1.425 3-11
db 450 200 : 1.74 sec

```

Temperature	Initial	Final	
Temperature	Initial	Final	
20	0.0	0.0	Level: 0
20	0.0	0.0	Level: 1
20	0.0	0.0	Level: 2
20	0.0	0.0	Level: 3
20	0.0	0.0	Level: 4
20	0.0	0.0	Level: 5
20	0.0	0.0	Level: 6
20	0.0	0.0	Level: 7

Attending	Age	Class
22	100	Class 1
23	100	Class 1
24	100	Class 2
25	100	Class 2
26	100	Class 3
27	100	Class 3
28	100	Class 4
29	100	Class 4
30	100	Class 5
31	100	Class 5

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809 2810 2811 2812 2813 2814 2815 2816 2817 2818

2002年10月

Note: The Macro "HDEF" was added on 8-3-95 because This code was used for another Product also called Hlyd. The original code that was Working by 9/15/94 in there, the Macro for Hlyd does not have Any code generation as of yet Here since it was not written for The new product. As faster processors were added to Hlyd products, the tables changed to under them also (see 4.486 5-11-95)

Reference Temperature

EXHIBIT V-47

75. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

(R) ... clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

EXHIBIT I-3

```

;
; OSC, so set the temp level up by one
;

```

```

mov     bh,00000000      ;force downward
;*****> cmp     al,7      ;Already at max?
;
;je      NotTR_OSC       ;yes, leave alone
;*****> inc     al        ;force level temp up by one
NotTR_OSC:

```

```

;
; Time needs to be set based on T Level
;

```

```

;*****> mov     ah,7      ;Max available
;
;sub     ah,al            ;7-? = 0 so watch it!
;
;cmp     ah,0
;
;jha     NotBig3          ;Not zero
;
;inc     ah              ;look at every minute
NotBig3: shl     ah,2      ;Align the time constant
;
;or      ah,bh            ;Align the direction
;
;or      ah,al            ;Align the TRange
;
;mov     di,al            ;TRange
;
;mov     bh,0            ;Upper index.
;
;*****>

```

Tlevel sets time – based on acceptable level of temperature rise or fall
(direction gives rise or fall, and TRange give temperature Low and Max in range.
Acceptable rate is time and temperature based dependent on direction of trend.

75. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

(R) ... clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

```
; OSC, so set the temp level up by one
;
mov     bh,0000000b           ;force downward
cmp     al,?                  ;Already at max?
je      NotTR_OSC             ;yes, leave alone
inc     al                    ;force level temp up by one
NotTR_OSC:
```

```
; Time needs to be set based on T Level
```

```
;
mov     ah,?                  ;Max available
sub     ah,al                 ;7-7 = 0 so watch it!
cmp     ah,0
jne     NotBigZ               ;Not zero
inc     ah                    ;look at every minute
NotBigZ:shl     ah,1           ;Align the time constant
or      ah,bh                 ;Align the direction
or      ah,al                 ;Align the TRange
mov     bl,al                 ;TRange
mov     bh,0                  ;Upper index.
```

```
; Need to setup the Dore Value based on current TRange
```

```
; push     bx
```

```
IFDEF  __zllilyp              ;5.06.1 4-2-95w Set Dore
value:
```

```
mov     ah,byte ptr cs:TDataTable[bx] ;*****
mov     al,5ch                 ; Index register to write *****
call    CfgWrite
```

Rising faster than
Acceptable rate,
forces second
clock signal

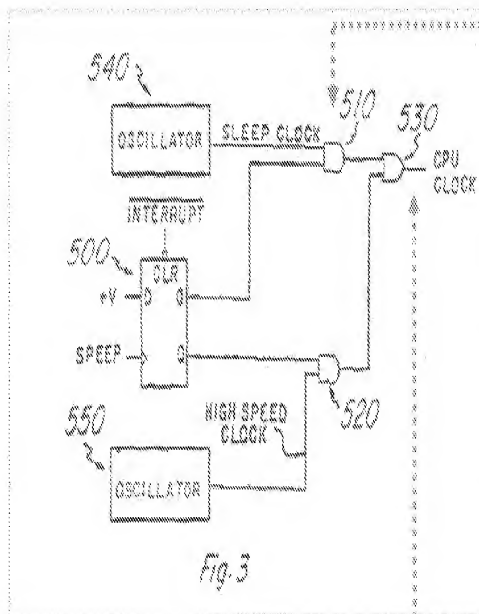
Computes Clock
Signal

Receive a First or
Second clock
signal

75. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (S) from said temperature controller, said clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)

(R) ... clock manager designating that a processing unit receives a first clock signal unless one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate, pursuant to which said clock manager designating that said processing unit receives a second clock signal. (R)



Rising faster than
Acceptable rate,
forces second
clock signal

Computes Clock
Signal

Receive a First or
Second clock
signal

Claim 76

76. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (S)

```

DoKBThermalRead:
;
; Try for a Thermal Management hit: return time count = 0
; then
; we had one, else we need to leave it along.
;
; .. .. .
call UpdateTemperature ; Do it
mov al,3ah
call CmosRead           ;Read Temperature byte
mov al,ah               ;Direction/Time/Level
and ah,3ah              ;Just the time and level
;
; please
mov bh,al               ;Get the direction
and al,7                ;Level computed for Temp
range
and bh,11000000b        ;Direction

cmp ah,0                ;Good read?
jne LeaveDownCountT     ;No, leave it along

;
; This is where we do some thermal management
; Hold ah value or reset it as needed...
;
;
cmp bh,11000000b
jne NotIR_OSC

```

DoKBThermalRead calls Temperature Controller: "UpdateTemperature"

NotIR_OSC

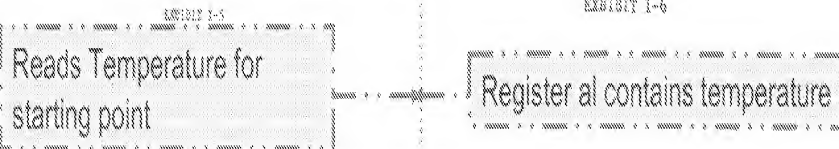
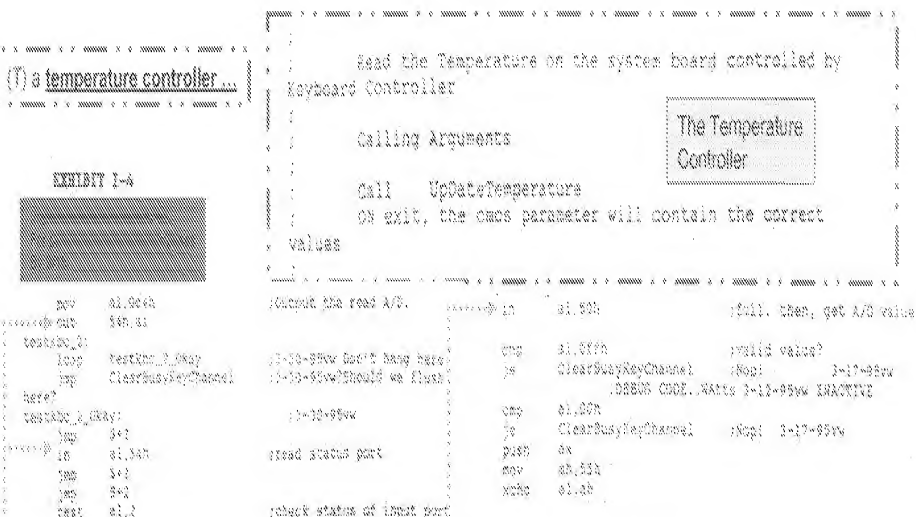
EXHIBIT I-2

EXHIBIT V-51

76. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (S)



Note: Channels 64 was changed to 54 and 60 was changed to 50 after 9/15/94. Does not affect invention, just make product work better for multitasking operating systems. Same temperature was obtained either way. Channels 60 and 64 used for FCC and UL agency testing. Implementation was functional and complete for patent purpose by 9/15/94.

EXHIBIT V-52

76. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (S)

```

    cmp     al,00h           ;Time to read data from A/D
    je      DoSBThermalRead
    shr     al,3
    dec     al
    and     ah,NOT_12h       ;Keep threshold stuff
    shl     al,1
    or      ah,al            ;New value
    jmp     WriteDownCount?

```

DoSBThermalRead:

```

:
:      Try for a Thermal Management fix: return time count = 0
:
Then

```

we can't do, like we need to leave it alone.

```

    call    UpdateTemperature ;Do it
    mov     al,0ah
    call    CmosRead          ;Read Temperature byte
    ;=====
    ;=====
    and     ah,10h            ;Just the time and level

```

```

;=====
;=====
;=====
    mov     bh,ah             ;Get the direction
    and     al,7              ;Level computed for temp
    range
    and     bh,11000000h      ;Direction

    cmp     ah,0              ;Good read?
    jne     LeaveDownCount?   ;No, leave it alone

```

This is where we do some thermal management
Hold ah value or reset it as needed...

```

    cmp     bh,11000000h      ;OSC?
    jne     NotTR_OSC         ;No!

```

ANNEXIT I-2

Valid sampled temperature

(E) ... using said sampled temperature at least once as a starting point

Sampled Temperature
Returned in CMOS Storage area.
Read CMOS storage to fetch sample point
(also returns "trends" found with sample point for later prediction)

Implementation functional
For prototype and patent purposes
By 9/15/1994

76. (Previously presented) An apparatus, comprising:

a **temperature controller (T)** for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, **(E)** predicting future changes in said monitored temperature; **(B)** and

a **clock manager (M)** adapted to receive a **control signal (Q)** from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. **(S)**

```

SecRange:
    mov     al,cl          ;Al has temp back: errorIndex
    mov     cx,7           ;cx = loop count

ScanRange:
    mov     dx,dx          ;dx,dx
    add     dx,ah          ;Over index for as or dx
    mov     esi,byte ptr ds:[SecRange+bx]
    jg      foundMax       ;Max range number found
    loop    ScanRange      ;Max range number found

FoundRange:
    mov     si,70h         ;Read Keyboard channel
    cld
    scasd
    mov     si,ah
    and     si,3
    mov     ax,0000h
    mov     dx,ah
    cmp     dx,si
    je      RangeStable
    je      RangeUpward
    jmp     RangeDownward

RangeStable:
    ;Range is downward trend
    ;Continue upward?
    ;Yes, found asc
    cmp     ax,100000000h
    je      RangeASC
    mov     cx,01h
    jmp     short AllRange

RangeASC:
    mov     cx,0000h
    jmp     short AllRange

RangeStable:
    mov     cx,0000h
    jmp     short AllRange

RangeDownward:
    cmp     ax,100000000h
    je      RangeASC
    mov     cx,10

```

(E) using said sampled temperature at least once as a starting point

Implementation Note:
For prototype / demo purposes
By 3/3/2004

Sampled Temperature
Returned in CMOS Storage area in register AL.

Prediction Work
based on sample
as starting point

EXHIB 10

76. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (S)

```

cmp     al,0x0          ;Time to read data from KB
je      DoKbThermalRead
shr     al,1
dec     al
and     ah,NOT 0x0       ;Keep thersold stuff
shl     al,1
or      ah,al            ;New value
jmp     WriteDownCountT

```

DoKbThermalRead:

```

; Try for a Thermal Management hit: return time count = 0
; then
; we had one, else we need to leave it along.
;

```

```

call    UpdateTemperature ;do it
mov     al,0x0
call    CmdRead            ;Read Temperature byte
and     ah,0x0             ;Read the time and level
please
mov     bh,al              ;Get the direction
and     al,1               ;level computed for Temp
range
and     bh,110000000b      ;Direction
cmp     ah,0               ;Good read?
jne     LeaveDownCountT    ;Nop, leave it along

```

```

; This is where we do some thermal management
; Hold ah value or reset it as needed...
;

```

```

cmp     bh,110000000b      ;Good?
jne     NotTR_OSC          ;Nop:

```

Looking at direction,
prediction
Dependent on
SetTrange and storing
value in CMOS for this
read.

(B) ... predicting future changes in said
temperature

Implementation functional
For protpe and patent purposes
By 9/15/1994

EXHIBIT I-2

EXHIBIT V-55

76. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (Q) from said temperature controller; said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (S)



76. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (S)

```

: ~~~~~
:           OSC, so set the temp level up by one
:
:     mov     bh,00000000b           ;force downward
:     cmp     al,7                   ;Already at max?
:     je      NotTR_OSC              ;yep, leave alone
:     inc     al                     ;force level temp up by one
:
: NotTR_OSC:
: ~~~~~

```

EXHIBIT I-3

```

: ~~~~~
:           Time needs to be set based on T Level
:
:     mov     ah,7                   ;Max available
:     sub     ah,al                  ;7-7 = 0 so watch it!
:     cmp     ah,0
:     jne     NotBig2
:     inc     ah                     ;Look at every minute
:
: NotBig2:mhl     ah,1               ;Align the time constant
:     or      ah,bh                  ;Align the direction
:     or      ah,al                  ;Align the TRange
:     mov     bl,al                  ;TRange
:     mov     bh,0                   ;Upper index.
:
: ~~~~~

```

(B) ... predicting future changes in said temperature

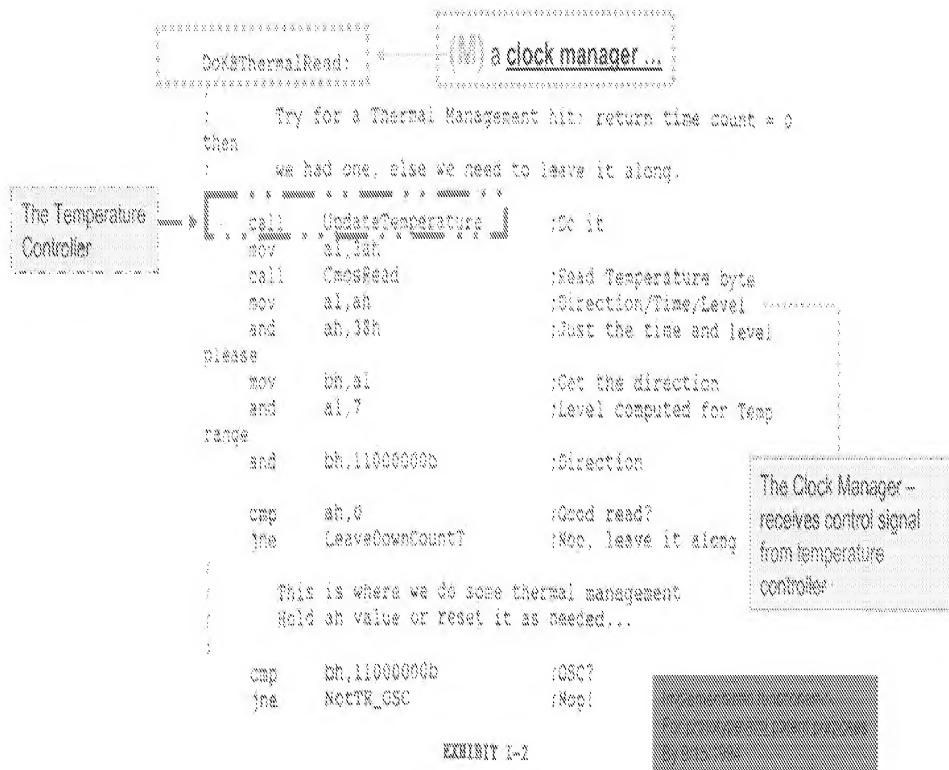
Predicting future changes
By studying trend to be downward,
Upward, stable, or oscillating.

EXHIBIT V-57

Implementation functional
For prototype and patent purposes
By 9/15/1994

76. (Previously presented) An apparatus, comprising:

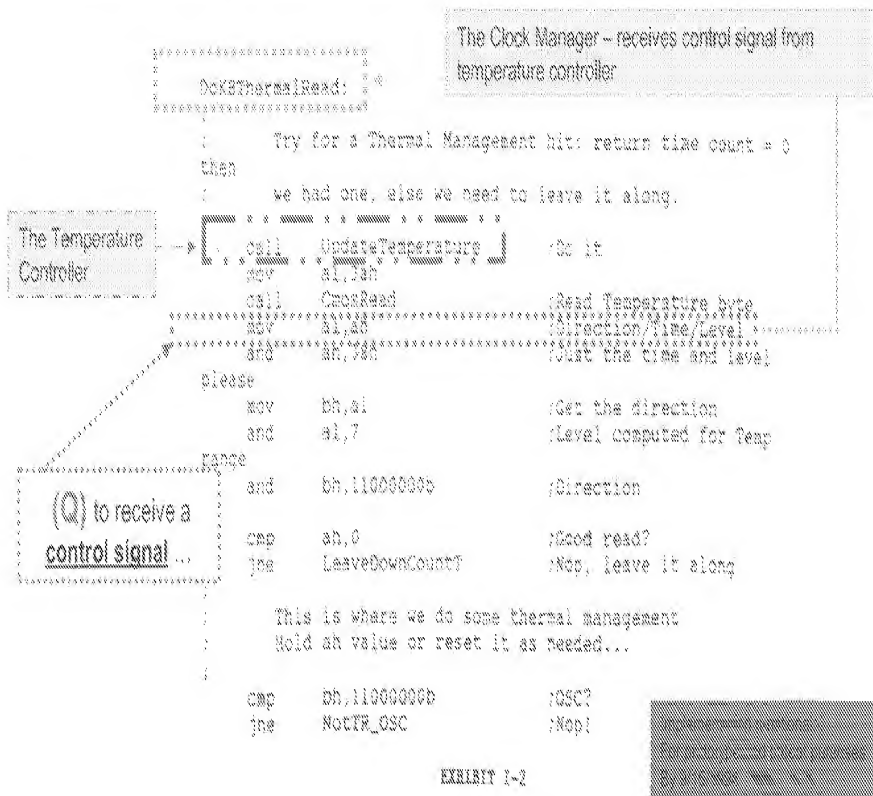
a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (S)



76. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and

a clock manager (M) adapted to receive a control signal (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (S)



76. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

(S)

(S) ... clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

```

DoThermalRead:
;
; Try for a Thermal Management bit: return time count = 0
then
; we had one, else we need to leave it along.
;
call    UpdateTemperature    ;Do it
mov     al,1ah
call    CmosRead             ;Read Temperature byte
mov     al,ah                 ;Direction/Time/Level
and     ah,1ah               ;Just the time and level
please
mov     bh,al                ;Get the direction
and     al,7                 ;Level computed for Temp
range
and     bh,11000000b         ;Direction

cmp     ah,0                 ;Good read?
jne     LeaveDownCount?      ;No, leave it alone

; This is where we do some thermal management
; Hold ah value or reset it as needed...

cmp     bh,11000000b         ;OSC?
jne     NotTR_OSC           ;Nop!

```

Leaves clock speed
the same
"A 1st clock Signal"

EXHIBIT I-2

EXHIBIT V-60

DECLASSIFIED BY: 6032
ON: 08/21/2013
BY: 6032

a **temperature controller** (T) for monitoring temperature within said apparatus and; using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a **clock manager** (M) adapted to receive a **control signal** (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

(S) ... clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

Reference Temperature

Note: The Macro "IFDEF" was added on 6-3-95 because
This code was used for another Product also called Ilyd. The
original code that was Working by 9/15/94 is there, the Macro for
Ilyd does not have Any code generation as of yet Here since it
was not written for the New product. As faster processing were
added to Ilyd products, the codes changed to under them also
(see 4-28-95 5-11-95)

EXHIBIT V-61

76. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

(S)

(S) ... clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

EXHIBIT I-3

```

;
;       OSC, so set the temp level up by one
;
mov     bh,0000000b           ;Force downward
;.....> cmp     al,7           ;Already at max?
je       NotTR_OSC            ;yep, leave alone
;.....> inc     al             ;force level temp up by one
NotTR_OSC:
;
;       Time needs to be set based on T Level
;
;.....> mov     ah,7           ;Max available
sub      ah,al                ;7-7 = 0 so watch it:
cmp      ah,0
jne      NotSig2              ;Not zero
inc      ah                   ;Look at every minute
NotSig2:shl     ah,1           ;Align the time constant
or       ah,bh                ;Align the direction
or       ah,al                ;Align the TRange
mov      ul,al                ;TRange
mov      bh,0                 ;Upper index.
;.....>

```

Tlevel sets time – based on acceptable level of temperature rise or fall (direction gives rise or fall, and TRange give temperature Low and Max in range. Acceptable rate is time and temperature based dependent on direction of trend.

EXHIBIT V-62

76. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

(S)

(S) ... clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

```

;
;      OSC, so set the temp level up by one
;
mov     bh,0000000b        ;force downward
cmp     al,7               ;Already at max?
je      NotTR_OSC         ;yes, leave alone
inc     al                 ;force level temp up by one
NotTR_OSC:
;
;      Time needs to be set based on f Level
;
mov     ah,7               ;Max available
sub     ah,al              ;7-7 = 0 so watch it!
cmp     ah,0
jne     NotSig2            ;Not zero
inc     ah                ;look at every minute
NotSig1shl     ah,2        ;Align the time constant
or      ah,bh              ;Align the direction
or      ah,al              ;Align the TRange
mov     bl,al              ;TRange
mov     bh,0              ;Upper index.

;      Need to setup the Dose Valve based on current TRange
;
push    ax

IFDEF   ezziilyp           ;5.0B.1 6-3-95w Set Dose
value
mov     ah,byte ptr cs:T00zeTable[bx] ;*****
mov     al,54h             ; Index register to write *****
call    cfgWrite

```

Rising faster than
Acceptable rate,
forces second
clock signal

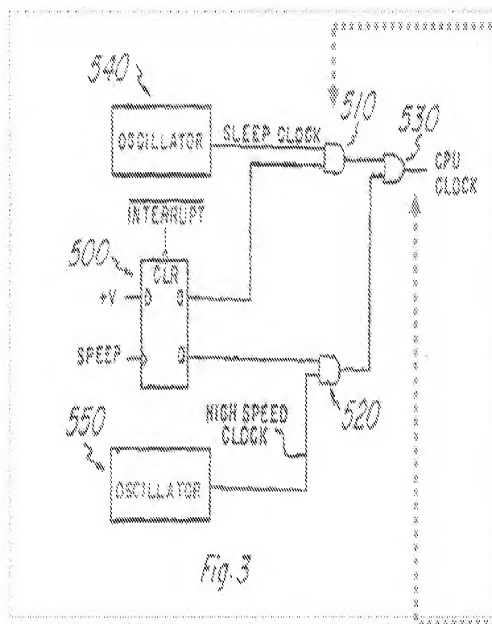
Computes Clock
Signal

Receive a First or
Second clock
signal

76. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, (E) predicting future changes in said monitored temperature; (B) and a clock manager (M) adapted to receive a control signal (Q) from said temperature controller, said clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.
(S)

(S) ... clock manager reducing processing unit clock speed when one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.



Rising faster than
Acceptable rate,
forces second
clock signal

Computes Clock
Signal

Receive a First or
Second clock
signal

80, 81, and 82

80. (Previously presented) The apparatus of Claim 74, further comprising:
a provision for user input coupled to said processing unit, (D) and
a provision for user output coupled to said processing unit. (E)

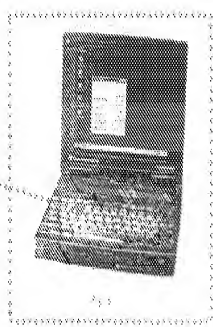
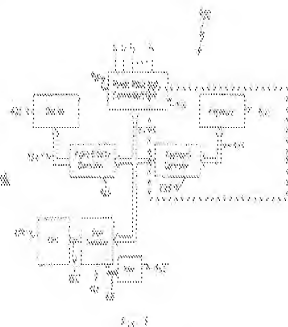
81. (Previously presented) The apparatus of Claim 75, further comprising:
a provision for user input coupled to said processing unit, (D) and
a provision for user output coupled to said processing unit. (E)

82. (Previously presented) The apparatus of Claim 76, further comprising:
a provision for user input coupled to said processing unit, (D) and
a provision for user output coupled to said processing unit. (E)

(D) ... a provision for user input coupled to said processing unit

These claims are supported by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

- An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.
- An internal keyboard and / or and External keyboard via the PS/2 keyboard port, see figure 8 number 940.
- An internal LCD Display and and/or External Monitor via the VGA Port, see figure 8 number 925.



80. (Previously presented) The apparatus of Claim 74, further comprising:
a provision for user input coupled to said processing unit, (D) and
a provision for user output coupled to said processing unit, (E)

81. (Previously presented) The apparatus of Claim 75, further comprising:
a provision for user input coupled to said processing unit, (D) and
a provision for user output coupled to said processing unit, (E)

82. (Previously presented) The apparatus of Claim 76, further comprising:
a provision for user input coupled to said processing unit, (D) and
a provision for user output coupled to said processing unit, (E)

(E) ... a provision for user input coupled to said processing unit

These claims are supported by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

- An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.
- An internal keyboard and / or and External keyboard via the PS/2 keyboard port, see figure 8 number 940.
- An internal LCD Display and and/or External Monitor via the VGA Port, see figure 8 number 925.

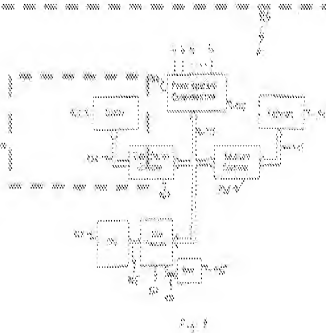


EXHIBIT V-67

63. (Previously presented) The apparatus of Claim 74, wherein said clock manager further stops clock signals from being sent to a bus coupled to the processing unit. (B)
64. (Previously presented) The apparatus of Claim 75, wherein said clock manager further stops clock signals from being sent to a bus coupled to the processing unit. (B)
65. (Previously presented) The apparatus of Claim 76, wherein said clock manager further stops clock signals from being sent to a bus coupled to the processing unit. (B)

(B) ... said clock manager further stops clock signals from being sent to a bus coupled to the processing unit.

These claims are support by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

• An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.

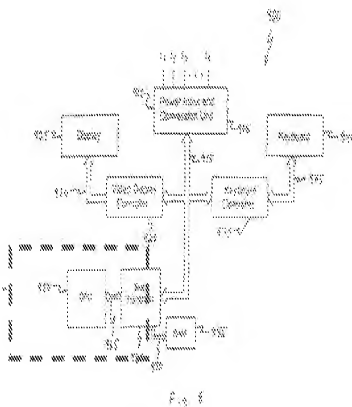
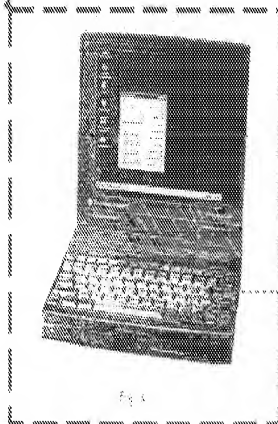


EXHIBIT V-69

83. (Previously presented) The apparatus of Claim 74, wherein said clock manager further stops clock signals from being sent to a bus coupled to the processing unit. (B)
84. (Previously presented) The apparatus of Claim 75, wherein said clock manager further stops clock signals from being sent to a bus coupled to the processing unit. (B)
85. (Previously presented) The apparatus of Claim 76, wherein said clock manager further stops clock signals from being sent to a bus coupled to the processing unit. (B)

(B) ... said clock manager further stops clock signals from being sent to a bus coupled to the processing unit.

These claims are support by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

- An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.
- An PCI Bus coupled to processor unit, see page 26

The 50 MHz bus of the CPU is connected to a VL to PCI bridge chip from ACC microelectronics to generate the PCI bus. The bridge chip takes a 33.333 Mhz oscillator to make the PCI bus clock. The Cirrus Logic GD7542 video controller is driven from this bus and this bus has an external connector for future docking options.

The GD542 video controller has a 14.318 Mhz oscillator input which is used internally to synthesize the higher video frequencies necessary to drive an internal 10.4" TFT panel or external CRT monitors. When running in VGA resolution mode the TFT panel may be operated at the same time as the external analog monitor. For Super VGA resolutions only the external CRT may be used.

83. (Previously presented) The apparatus of Claim 74, wherein said clock manager further stops clock signals from being sent to a bus coupled to the processing unit. (B)
84. (Previously presented) The apparatus of Claim 75, wherein said clock manager further stops clock signals from being sent to a bus coupled to the processing unit. (B)
85. (Previously presented) The apparatus of Claim 76, wherein said clock manager further stops clock signals from being sent to a bus coupled to the processing unit. (B)

(B) ... said clock manager further stops clock signals from being sent to a bus coupled to the processing unit.

These claims are support by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

- * An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.
- * An PCI Bus coupled to processor unit, see page 26
- * An PCI Bus coupled to processor unit, is initialized via code page 43.

1. NAME
 2. DATE
 3. TIME
 4. PLACE
 5. REASON
 6. WITNESSES
 7. SIGNATURE
 8. DATE
 9. TIME
 10. PLACE
 11. REASON
 12. WITNESSES
 13. SIGNATURE
 14. DATE
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 247. SIGNATURE
 248. DATE
 249. TIME
 250. PLACE

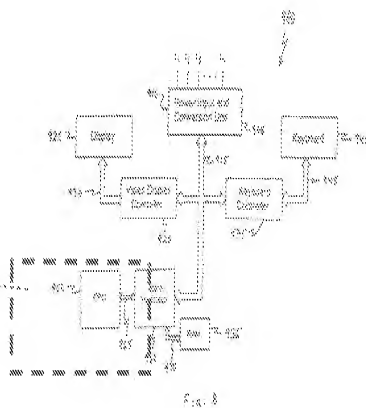
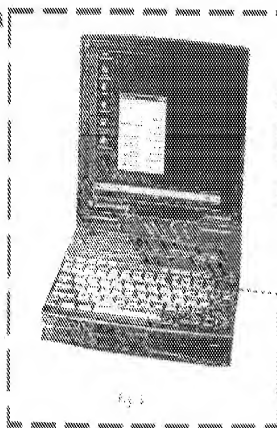
Claims 86, 87, 88

86. (Previously presented) The apparatus of Claim 83, wherein said clock manager further stops clock signals from being sent to any other processors connected to the bus. (B)
87. (Previously presented) The apparatus of Claim 84, wherein said clock manager further stops clock signals from being sent to any other processors connected to the bus. (B)
88. (Previously presented) The apparatus of Claim 85, wherein said clock manager further stops clock signals from being sent to any other processors connected to the bus. (B)

(B) ... said clock manager further stops clock signals from being sent to any other processors connected to the bus

These claims are support by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

* An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.



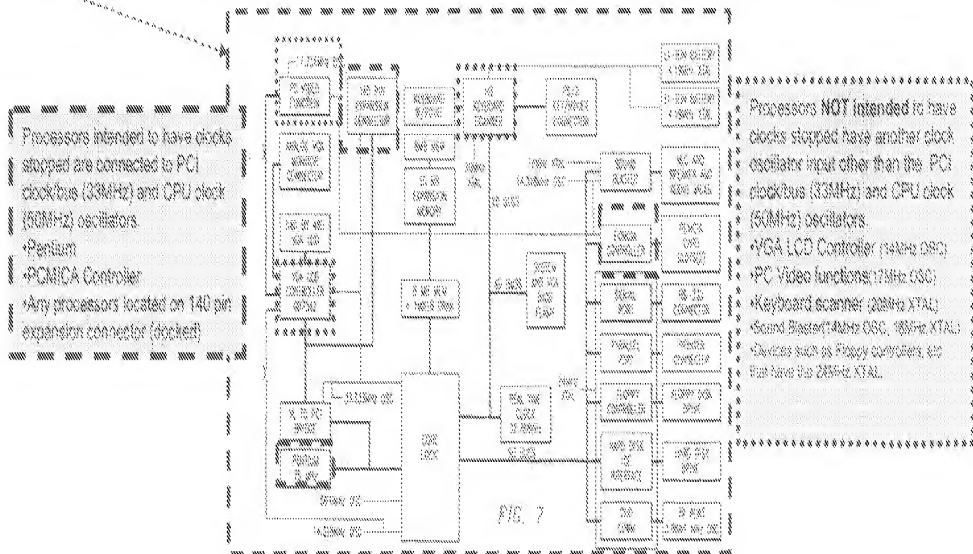
66. (Previously presented) The apparatus of Claim 83, wherein said clock manager further stops clock signals from being sent to any other processors connected to the bus. (B)
67. (Previously presented) The apparatus of Claim 84, wherein said clock manager further stops clock signals from being sent to any other processors connected to the bus. (B)
68. (Previously presented) The apparatus of Claim 85, wherein said clock manager further stops clock signals from being sent to any other processors connected to the bus. (B)

(B) ... said clock manager further stops clock signals from being sent to any other processors connected to the bus

These claims are support by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

• An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.

• Multiple processors were present within the prototype as represented by Figure 7.



89. (Previously presented) The apparatus of Claim 74, wherein said temperature controller is on board said processing unit. (D)

90. (Previously presented) The apparatus of Claim 75, wherein said temperature controller is on board said processing unit. (D)

91. (Previously presented) The apparatus of Claim 76, wherein said temperature controller is on board said processing unit. (D)

92. (Previously presented) The apparatus of Claim 74, wherein said monitored temperature is detected via a temperature sensor coupled to said processing unit.

(D) ... said temperature controller is on board said processing unit.

These claims are support by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

• An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.

• An Internal Keyboard Controller that contained the logic and A/D converter and transmit the information to the CPU to control the temperature, see figure 8 number 940.

The "Do Thermal Management" loop first goes and gets the CPU relevant temperature, then it computes the direction of the temperature, puts up the tick counts for later usage (e.g. how many times you need to slice to bring down the temperature). Getting the temperature is relatively simple, the system goes out and reads the value from a keyboard controller, from an A/D converter, etc. If an A/D converter is used, the equations in the program convert an A/D value over to some value of temperature based on a gradient, which is a little different for every system. Theoretically, you can normalize the gradient for any system if there are enough characterizations. As an example, in the program, the temperature of a Toshiba Case is measured against the temperature of the present system to compare the difference (37 degrees celsius versus the 37.25 degree celsius reading of the present system - as a result, any system can be benchmarked other systems in order to normalize the temperature gradient). Each of the zones has a corresponding temperature range. These are a series of tables in the program for computations that select the number of ticks are to be used to sleep the processor. An advantage of this embodiment of the invention is that it facilitates predictions of temperature zones when the temperature is increasing, decreasing, oscillating or stable. This facilitates table action or implements additional action by the system. The feed back loop in this embodiment has more

Claims and 92, 93, 94

92. (Previously presented) The apparatus of Claim 74, wherein said monitored temperature is detected via a temperature sensor coupled to said processing unit. (D)
93. (Previously presented) The apparatus of Claim 75, wherein said monitored temperature is detected via a temperature sensor coupled to said processing unit. (D)
94. (Previously presented) The apparatus of Claim 76, wherein said monitored temperature is detected via a temperature sensor coupled to said processing unit. (D)

(D) ... said monitored temperature is detected via a temperature sensor coupled to said processing unit.

These claims are support by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

- An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.
- An internal Keyboard Controller that contained the logic and A/D converter and transmit the information to the CPU to control the temperature, see figure 8 number 940.

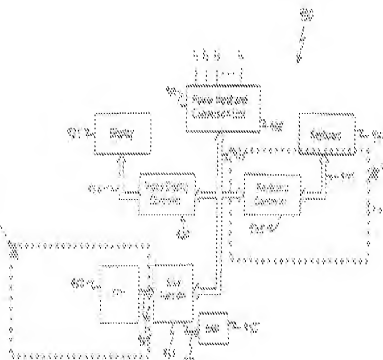
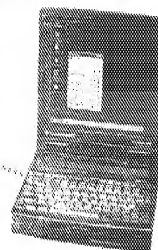


Fig. 8



92. (Previously presented) The apparatus of Claim 74, wherein said monitored temperature is detected via a temperature sensor coupled to said processing unit. (D)
93. (Previously presented) The apparatus of Claim 75, wherein said monitored temperature is detected via a temperature sensor coupled to said processing unit. (D)
94. (Previously presented) The apparatus of Claim 76, wherein said monitored temperature is detected via a temperature sensor coupled to said processing unit. (D)

(D) ... said monitored temperature is detected via a temperature sensor coupled to said processing unit.

These claims are support by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

- An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.

- An internal Keyboard Controller that contained the logic and A/D converter and transmit the information to the CPU to control the temperature, see figure 8 number 940,

The "Do Thermal Management" loop first goes and gets the CPU's relevant temperature, then it computes the direction of the temperature, puts up the tick counts for later usage (e.g. how many times you need to slice to bring down the temperature). Getting the temperature is relatively simple, the system goes out and reads the value from a keyboard controller, from an A/D converter, etc. If an A/D converter is used, the equations in the program convert an A/D value over to some value of temperature based on a gradient, which is a little different for every system. Theoretically, you can normalize the gradient for any system if there are enough characterizations. As an example, in the program, the temperature of a Toshiba Cise is measured against the temperature of the present system to compare the difference (37 degrees celcius versus the 37.25 degree celcius reading of the present system - as a result, any system can be benchmarked other systems in order to normalize the temperature gradient). Each of the zones has a corresponding temperature range. There are a series of tables in the program for computations that select the number of ticks are to be used to sleep the processor. An advantage of this embodiment of the invention is that it facilitates predictions of temperature zones when the temperature is increasing, decreasing, oscillating or stable. This facilitates table action or implements additional action by the system. The feed back loop in this embodiment has more

Claims 95, 96, 97.

95. (Previously presented) The apparatus of Claim 74, wherein said temperature sensor is mounted within said processing unit. (D)
96. (Previously presented) The apparatus of Claim 75, wherein said temperature sensor is mounted within said processing unit. (D)
97. (Previously presented) The apparatus of Claim 76, wherein said temperature sensor is mounted within said processing unit. (D)

(D) ... **said temperature sensor is mounted within said processing unit**

This was a technology limitation at the time since it was quicker and less expensive to use an CPU that was commercially available at the time and place the temperature sensor adjacent to the CPU rather than built a CPU with the temperature sensor within it. However, for mass production, placing the temperature sensor within the processing unit would have been more cost effective and would have been the selected choice if the technology limitation at the time was removed.

These claims are support by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

- An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.
- An internal Keyboard Controller that contained the logic and A/D converter and transmit the information to the CPU to control the temperature, see figure 8 number 940.

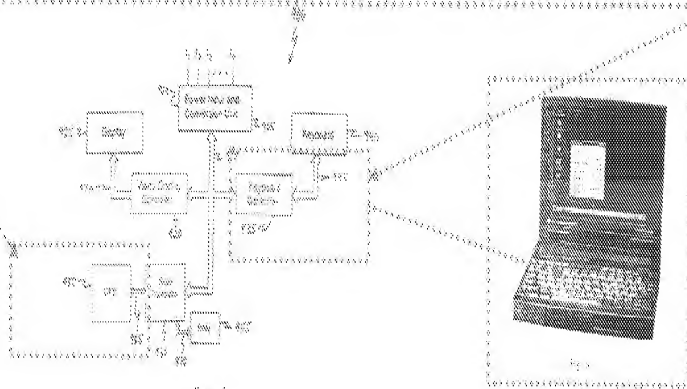


Fig. 8

95 (Previously presented) The apparatus of Claim 74, wherein said temperature sensor is mounted within said processing unit. (D)

96. (Previously presented) The apparatus of Claim 75, wherein said temperature sensor is mounted within said processing unit. (D)

97 (Previously presented) The apparatus of Claim 75, wherein said temperature sensor is mounted within said processing unit. (D)

This was a technology limitation at the time since it was quicker and less expensive to use an CPU that was commercially available at the time and place the temperature sensor adjacent to the CPU rather than built a CPU with the temperature sensor within it. However, for mass production, placing the temperature sensor within the processing unit would have been more cost effective and would have been the selected choice if the technology limitation at the time was removed.

(D) ... said monitored temperature is detected via a temperature sensor coupled to said processing unit.

These claims are support by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

• An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.

• An internal Keyboard Controller that contained the logic and A/D converter and transmit the information to the CPU to control the temperature, see figure 8 number 940.

The "Do Thermal Management" loop first goes and gets the CPU's relevant temperature, then it compares the direction of the temperature, puts up the tick counts for later usage (e.g. how many times you need to slice to bring down the temperature). Getting the temperature is relatively simple, the system goes out and reads the value from a keyboard controller, from an A/D converter, etc. If an A/D converter is used, the equations in the program convert an A/D value over to some value of temperature based on a gradient, which is a little different for every system. Theoretically, you can normalize the gradient for any system if there are enough characterizations. As an example, in the program, the temperature of a Toshiba Case is measured against the temperature of the present system to compare the difference (37 degrees celsius versus the 33.35 degree celsius reading of the present system - as a result, any system can be benchmarked other systems in order to normalize the temperature gradient). Each of the zones has a corresponding temperature range. There are a series of tables in the program for computations that select the number of jicks are to be used to sleep the processor. An advantage of this embodiment of the invention is that it facilitates predictions of temperature zones when the temperature is increasing, decreasing, oscillating or stable. This facilitates table action or implements additional action by the system. The feed back loop in this embodiment has more

EXHIBIT 18-A

[illegible]

59. "Normally," asserted the operators of Claim 75, "when said temperature sensor is mounted on a printed circuit board adjacent said processing unit (6)..."

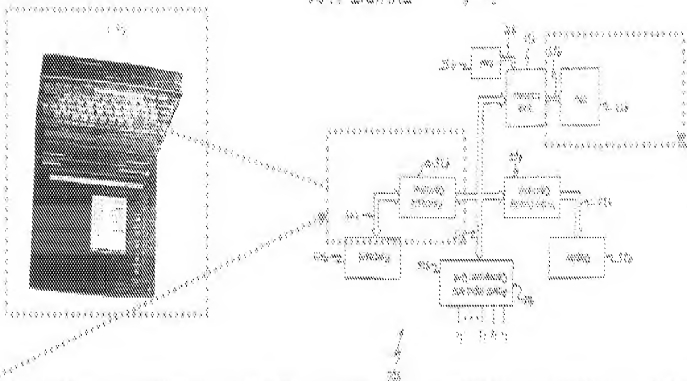
page 1000

...said temperature sensor is mounted adjacent said processing unit. (1)

(This was a technology limitation at the time since it was quicker and less expensive to use an CPU that was commercially available at the time and place the temperature sensor adjacent to the CPU rather than build a CPU with the temperature sensor within it. However, for mass production, placing the temperature sensor within the processing unit would have been more cost effective and would have been the selected choice if the technology limitation at the time was removed.)

These claims are supported by the fact that the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

- An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.
- An internal Keyboard Controller that contained the logic and A/D converter and transmit the information to the CPU to control the temperature, see figure 8 number 940



96. (Previously Presented) The apparatus of Claim 74, wherein said temperature sensor is mounted on a printed circuit board adjacent said processing unit. (D)

99. (Previously Presented) The apparatus of Claim 75, wherein said temperature sensor is mounted on a printed circuit board adjacent said processing unit. (D)

100. (Previously Presented) The apparatus of Claim 75, wherein said temperature sensor is mounted on a printed circuit board adjacent said processing unit. (D)

This was a technology limitation at the time since it was quicker and less expensive to use an CPU that was commercially available at the time and place the temperature sensor adjacent to the CPU rather than built a CPU with the temperature sensor within it. However, for mass production, placing the temperature sensor within the processing unit would have been more cost effective and would have been the selected choice if the technology limitation at the time was removed.

(D) ... said temperature sensor is mounted adjacent said processing unit.

These claims are support by the fact the prototype (Page 26 line 6 to 12, Figure 6 is the representation of the prototype model) used for heat and power testing was completed by 9/15/1994 and the prototype used

- An Intel CPU (Central Processing Unit) see figure 8 number 950, figure 5 page 25 lines 7 to line 10.

- An Internal Keyboard Controller that contained the logic and A/D converter and transmit the information to the CPU to control the temperature, see figure 8 number 940.

The "Do Thermal Management" loop first goes and gets the CPU relevant temperature, then it computes the direction of the temperature, puts up the tick counts for later usage (e.g. how many times you need to sleep to bring down the temperature). Getting the temperature is relatively simple, the system goes out and reads the value from a keyboard controller, from an A/D converter, etc. If an A/D converter is used, the equations in the program convert an A/D value over to some value of temperature based on a gradient, which is a little different for every system. Theoretically, you use the gradient for any system if there are enough characterizations. As an example, in the program, the temperature of a Toshiba Cane is measured against the temperature of the present system to compare the difference (37 degrees celsius versus the 37.25 degree celsius reading of the present system - as a result, any system can be benchmarked other systems in order to normalize the temperature gradients. Each of the zones has a corresponding temperature range. There are a series of tables in the program for computations that select the number of ticks are to be used to sleep the processor. An advantage of this embodiment of the invention is that it facilitates predictions of temperature zones when the temperature is increasing, decreasing, oscillating or stable. This facilitates table action or implements additional action by the system. The feed back loop in this embodiment has more

Claims 101, 102, and 103

101. (Previously presented) The apparatus of Claim 74, herein said temperature is sensed on a periodic basis. (A)

102. (Previously presented) The apparatus of Claim 75, wherein said temperature is sensed on a periodic basis. (A)

103. (Previously presented) The apparatus of Claim 76, wherein said temperature is sensed on a periodic basis. (A)

(A) ... said temperature is sensed on a periodic basis.

```

cmp     al,08h           ;Time to read data from KSP?
je      DoKSPThermalRead
shl     al,2
dec     ah,MOT_18h       ;Keep threshold stuff
shl     al,2
or      ah,al             ;New value
jnp     WriteDownCountT
    
```

A sample, on periodic basis

Down counts period to sample
For next pass, when bit hits 08h
Then on next pass period will expire
And sample of temperature will occur

DoKSPThermalRead:

```

; Try for a Thermal Management hit: return time count = 0
; when we had one; else we need to leave it alone.
    
```

```

call    UpdateTemperature ;to it
mov     al,18h
call    CMOSRead          ;Read Temperature byte
mov     ah,ah              ;direction/time/level
and     ah,08h            ;Just the time and level
please
mov     bh,al              ;Get the direction
and     al,7              ;level computed for Temp
range
and     bh,11000000b       ;Direction

cmp     ah,0              ;Good read?
jne     LeaveDownCountT    ;Nop, leave it alone
    
```

Temperatures and control signals are returned in CMOS storage area that is read by CMOSRead program

```

; This is where we do some thermal management
; Hold ah value or reset it as needed...
    
```

```

cmp     bh,11000000b       ;OSC?
jne     NOTIR_OSC          ;Nop!
    
```

EXHIBIT 1-2

EXHIBIT V-83

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EXHIBIT 1-2

Claims 104, 105, and 106

104. (Previously presented) The apparatus of Claim 101, wherein the frequency of said temperature sensing changes as said temperature reaches preselected threshold values. (A)
105. (Previously presented) The apparatus of Claim 102, wherein the frequency of said temperature sensing changes as said temperature reaches preselected threshold values. (A)
106. (Previously presented) The apparatus of Claim 103, wherein the frequency of said temperature sensing changes as said temperature reaches preselected threshold values. (A)

(A) ... the frequency of said temperature sensing changes as said temperature reaches preselected threshold values.

EXHIBIT I-3

```

;
;       OSC, so set the temp level up by one
;
mov     bh,80000000b           ;force downward
cmp     al,7                   ;Already at max?
je      NotTR_OSC              ;yep, leave alone
inc     al                     ;force level temp up by one
NotTr_OSC:

```

(A) ... the frequency of said temperature sensing changes as said temperature reaches preselected threshold values.

```

;
;       Time needs to be set based on T Level
;
mov     ah,7                   ;Max available
sub     ah,al                   ;7-? = 0 so watch it!
cmp     ah,0
jns     NoChiq7                ;Not zero
inc     ah                     ;look at every minute
NoChiq7:shl     ah,2            ;Align the time constant
or      ah,bh                  ;Align the direction
or      ah,al                   ;Align the TRange
mov     di,al                   ;TRange
mov     bh,0                    ;Upper index.

```

Need to setup the Dore Value based on current TRange

```

;
;       push    dx
;
IFDEF  rz1111pp                ;5.0B.1 4-1-95w Set Dore
value
mov     ah,byte ptr cs:TDoreTable[bx]
mov     al,bah                  ; Index register to write
call    CfgWrite

```

Sample period time based on Temperature Level

EXHIBIT V-84

Claims 107, 108, and 109

107. (Previously presented) The apparatus of Claim 101, wherein the frequency of said temperature sensing is user modifiable. (D)

108. (Previously presented) The apparatus of Claim 102, wherein the frequency of said temperature sensing is user modifiable. (D)

109. (Previously presented) The apparatus of Claim 103, wherein the frequency of said temperature sensing is user modifiable. (D)

Auto/on/off set by user in SETUP

Implementation functional
For prototype and patent purposes
By 3-24-1995

Smart range coded added 3-12-95vw
Allow user to select which range of thermal management he
wants
Power Saving = ON --DC range
 OFF --AC range
 AUTO --If AC operation, using AC range
 --If DC operation, using DC range

EXHIBIT 1-7

(D) ... the frequency of said temperature sensing is user modifiable

3-24-95 Added Auto/On/off selection

exp7 01,66h
call CmosRead ;Get Auto/On/Off Selection
;h6

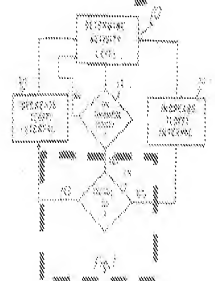
Note: this feature was added after code was converted to ROM based needed for production as an enhancement to technology in Mar 1995. Dischler did NOT provide auto selection by user.

Claims 110

110. (Previously presented) The apparatus of Claim 74, wherein said clock manager avoids selectively stopping clock signals from being sent to said processing unit when said processing unit is processing critical I/O. (F)

(F) ... said clock manager avoids selectively stopping clock signals from being sent to said processing unit when said processing unit is processing critical I/O.

consumption is reduced from the E(max) state. In order to align the T(off) intervals with periods of CPU inactivity, the CPU activity and temperature levels are used to determine the width of the T(off) intervals in a closed loop. FIG. 1 depicts such a closed loop. The activity level of the CPU is determined at Step 10. If CPU temperature is not a concern (Step 12), the activity level of the CPU is again determined (Step 10). If CPU temperature is a concern, a determination is made (Step 14) as to whether or not critical I/O is being performed. If critical I/O is being performed, the present invention increases the T(off) interval (Step 20) and returns to determine the activity level of the CPU again. If, on the other hand, critical I/O is not being performed, the present invention decreases the T(off) interval (Step 30) and proceeds to again determine the activity level of the CPU. Thus the T(off) intervals are constantly being adjusted to match the system activity level and control the temperature level of the CPU.



Claims 111

111. (Previously presented) The apparatus of Claim 75, wherein said processing unit receives said first clock signal while processing critical I/O regardless of said one of: a) said monitored temperature rises to at least a selected reference temperature level, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

(F) ... said processing unit receives said first clock signal while processing critical I/O regardless of said one of: a) said monitored temperature rises to at least a selected reference temperature level, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

period adjusts itself in response to CPU temperature. Performance taken away from the user during power conservation and thermal management control is balanced against critical I/O going on in the system.

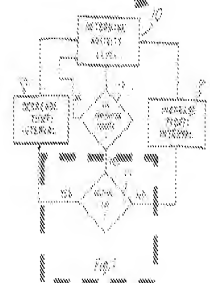
Existing thermal management systems turn on and stay on until the CPU temperature goes down. Unfortunately, this preempts things in the system. Such is not the case in the environment of the present invention. The same sleep manager has global control. As an example, while CPU temperature may be rising or have risen to a level of concern, the system may be processing critical I/O, such as a wave file being played. With critical I/O, the system of the present invention will play the wave file without interruption even though the result may be a higher CPU temperature. CPUs do not typically overheat all at once. There is a temperature rise gradient. The system of the present invention takes advantage of the temperature rise gradient to give a user things that affect the user time slices and take it away from him when it's not affected.

Claims 112

112. (Previously presented) The apparatus of Claim 76, wherein said clock manager avoids reducing said processing unit clock speed when said processing unit is processing critical I/O. (F)

(F) ... said clock manager avoids reducing said processing unit clock speed when said processing unit is processing critical I/O.

consumption is reduced from the E(max) state. In order to align the T(off) intervals with periods of CPU inactivity, the CPU activity and temperature levels are used to determine the width of the T(off) intervals in a closed loop. FIG. 1 depicts such a closed loop. The activity level of the CPU is determined at Step 10. If CPU temperature is not a concern (Step 12), the activity level of the CPU is again determined (Step 10). If CPU temperature is a concern, a determination is made (Step 14) as to whether or not critical I/O is being performed. If critical I/O is being performed, the present invention increases the T(off) interval (Step 20) and returns to determine the activity level of the CPU again. If, on the other hand, critical I/O is not being performed, the present invention decreases the T(off) interval (Step 30) and proceeds to again determine the activity level of the CPU. Thus the T(off) intervals are constantly being adjusted to match the system activity level and control the temperature level of the CPU.



Claim 113

113. (Previously presented) The apparatus of Claim 74 wherein said clock manager selectively restores said processing unit clock speed when said ambient temperature drops to at least a selected reference temperature. (3)

(C) said clock manager selectively restores said processing unit clock speed when said monitored temperature drops to at least a selected reference temperature.

```

=====
NetRngSeed:      sh:0          :Align the time constraint
or              sh:0         :Align the direction
or              sh:xi        :Align the change
=====
env             sh:l         :Range
env             sh:c         :Number index.
=====
```

Need to recalc the Date Value based on current Month

\$389 \$7

```

1FDEF    0x1fdef000      1.08.1 6-1-79% Set Page
Value

```

```

mov     eax,byte ptr cs:[table+bx]
mov     al,[bx]           ; Index register to write
cld

```

[illegible]

1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809 2810 2811

222 622

[illegible]
$$\frac{d^2 \phi}{d\tau^2} + \frac{d\phi}{d\tau} + \phi = 0 \quad \text{with} \quad \phi(0) = 1, \quad \phi(\infty) = 0$$

ACKNOWLEDGMENTS

2007 2008
 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809 2810 2811 2812 2813 2814 2815 2816 2817 2818 2819 2820 2821 2822 2823 28

Verwendet:

22 23

22

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

Table:

66 308



289, 288, 289, 282, 294 16,462 3-11-95

202 1/4 sec

5281-23

Impoverished families ...
For children and families in distress
By R. M. L. ...

	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
Temperature	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Pressure	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Altitude	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Humidity	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Wind Speed	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Cloud Cover	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Soil Moisture	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Light Intensity	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Water Level	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Seismic Activity	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Atmospheric Pressure	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Gravimetric Data	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Acoustic Sensor Data	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Optical Sensor Data	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Thermal Sensor Data	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Proximity Sensor Data	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Gas Concentration	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Electromagnetic Interference	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Radio Frequency Identification	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Biometric Data	10000	10001	10010	10011	10100	10101	10110	10111	11000	11001	11010	11011	11100	11101	11110	11111
Environmental Data	10000	10001	10010	10011	10100											

CONCLUSIONS

TRange different for AC or Battery operation. Index of zero (0) will be for Level 0 in table, etc.

EXNER V-90

Claim 16

116 (Previously prepared) The apparatus of Claim 75, wherein said clock manager further designates that said processing unit receives said first clock signal when said processor is in a first state and said second clock signal when said processor is in a second state.

④ said clock manager further designates that said processing unit receives said first clock signal when said monitored temperature drops to at least a selected reference temperature

[illegible]

Modifies clock signal
When $bx=0$, first clock signal

[illegible]

TempRange	Label	Byte
TempRange	Label	Byte
00	00h	Level: 0
01	00h	Level: 1
02	00h	Level: 2
03	00h	Level: 3
04	00h	Level: 4
05	00h	Level: 5
06	00h	Level: 6
07	00h	Level: 7

[illegible][illegible]

5552 • J. Neurosci., September 24, 2008 • 28(39):5547–5557

```

720167000.
20 000 / Disabled
20 100 / 2 sec's
20 100 / 1 sec
20 200 / 1/2 sec
20 200, 300, 200, 100 / 4.480 5-11-99
: 20 200 / 1/2 sec

```

TRange different for AC or Battery operation. Index of zero (0) will be for Level 0 in table; etc.

5252 LI

As Temperature lowers, the index is reduced until the index reached zero (0).
The index within the TDozeTable indicates the clock speed to be selected.
An index of zero (0) disables the second clock and restores the first clock signal.

Claim 117 and 118

117. (Previously presented) The apparatus of Claim 75, wherein said clock manager designates that said processing unit receives said first clock signal in response to detection of a critical operation, regardless if one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (F)
118. (Previously presented) The apparatus of Claim 75, wherein said clock manager designates that said processing unit receives said first clock signal in response to processing of a critical operation, regardless if one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate. (F)

(F) ... said clock manager designates that said processing unit receives said first clock signal in response to processing of a critical operation, regardless if one of: a) said monitored temperature rises to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are rising at a faster than acceptable rate.

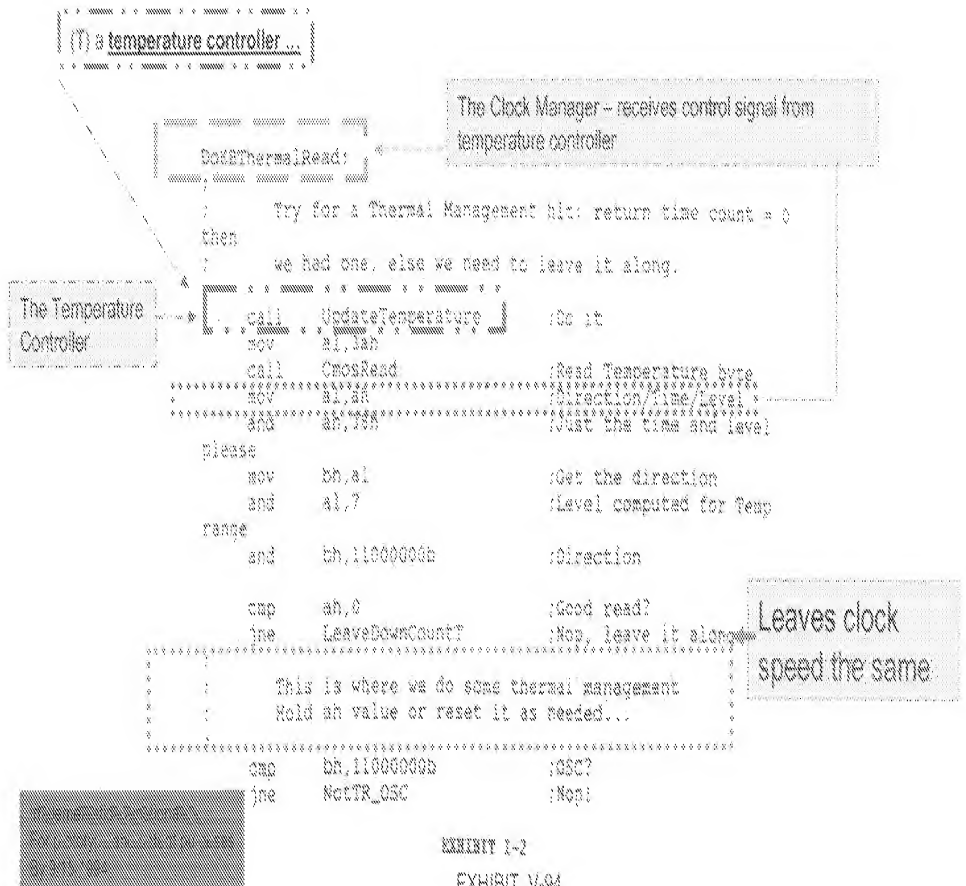
period adjusts itself in response to CPU temperature. Performance taken away from the user during power conservation and thermal management control is balanced against critical I/O going on in the system.

Existing thermal management systems turn on and stay on until the CPU temperature goes down. Unfortunately, this preempts things in the system. Such is not the case in the environment of the present invention. The same sleep manager has global control. As an example, while CPU temperature may be rising or have risen to a level of concern, the system may be processing critical I/O, such as a wave file being played. With critical I/O, the system of the present invention will play the wave file without interruption even though the result may be a higher CPU temperature. CPUs do not typically overheat all at once. There is a temperature rise gradient. The system of the present invention takes advantage of the temperature rise gradient to give a user things that affect the user time slices and take it away from him when its not affected.

Claim 122

122. (Previously presented) An apparatus, comprising:

a **temperature controller** (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a **clock manager** (M) adapted to receive a control signal from said temperature controller, said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of: a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate. (U)



122. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and

a clock manager (10) adapted to receive a control signal from said temperature controller, said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of: a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate. (U)

⑦ a temperature controller ..

The Temperature Controller

000000 14

Read the Temperature on the system board controlled by
Keyboard Controller

Online Appendix

[illegible]

ON exit, the cmos parameter will contain the correct values

For instance, and contrary to the

[illegible]

2020 3-4

5077-56

Reads Temperature for
starting point

Register al contains temperature

Changes 32 and 33 changed to 34 and 35 were changes to 32 with no 33's. One was a software update, and made product work better for multi-tasking operating systems. Some temperature was obtained another way. Changes 36 and 34 used for FCC and UL agency testing. Implementation was functional and complete for actual purpose by 9/15/94.

EXHIBIT 1495

122. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and

a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of: a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate. (U)

(T) a temperature controller ...

```
SetRange:
    xchg    al,cl          ;Al has temp back; ah=index
    mov     cx,7           ;cx = loop count

ScanRange:
    mov     bx,cx
    add     bl,ah          ;Over index for ac or dc
    cmp     al,byte ptr ds:[TempRange+bx]
    jg      FoundRange     ;cx=range number found
    loop    ScanRange

FoundRange:
    ;cx=range number found
```

EXHIBIT I-8

Temperature for starting
point - Register al contains
temperature

EXHIBIT I-8
Temperature for starting
point - Register al contains
temperature

122. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and

a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of: a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate. (U)

7) a temperature controller...

```

setrange:
    mov     ai,ci          %AI has temp backr abs:index
    mov     cx,%i          %CX = loop count

```

```

SearchRange:
    mov     bx,cx
    add     di,di                ;over index for bc or de
    cmp     di,(byte ptr 0:[SearchRange+bx])
    jz      FoundRange         ;SearchRange number found
    inc     SearchRange

```

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Journal compilation © 2006 Blackwell Publishing Ltd

```

mov     al,0x0             ;Send Keyboard channel
scasd   %eax
call    @PLT.00000000
mov     al,0x0
int     $0x2               ;Send Temperature Range
mov     al,0x00000000      ;Upper direction trend value
cmp     al,0x0             ;Value of trend read
je       @PLT.00000000      ;If trend is 0, then
                                ;trends are not present. Send range
                                ;New range is greater than

```

```

      (Range is downward trend)
csp      ok:1000000000      electrons speed?
is      Range=0.07      Yes, found one

```

$$\frac{\partial \hat{y}_t}{\partial y_{t-1}} = \frac{\partial \hat{y}_t}{\partial y_t} \frac{\partial y_t}{\partial y_{t-1}} = \frac{\lambda_1}{\lambda_2} \frac{\partial \hat{y}_t}{\partial y_t}$$
$$\frac{w_{i+1}^{(k)}}{w_i^{(k)}} = \frac{p_i^{(k)} - \lambda_i^{(k)} \frac{p_i^{(k)}}{w_i^{(k)}}}{p_i^{(k)} - \lambda_i^{(k)} \frac{p_i^{(k)}}{w_i^{(k)}} + \lambda_i^{(k)} \frac{p_i^{(k)}}{w_i^{(k)}}} = \frac{p_i^{(k)} - \lambda_i^{(k)} \frac{p_i^{(k)}}{w_i^{(k)}}}{p_i^{(k)} - \lambda_i^{(k)} \frac{p_i^{(k)}}{w_i^{(k)}} + \lambda_i^{(k)} \frac{p_i^{(k)}}{w_i^{(k)}}}$$

2000 年 12 月 15 日

```

mov     cr0,cr0
jmp     short  AllRange
RangeDown:
cmp     edi,0xffffffff             (load one Downward)
je      RangeCSC                  res. One Bound
mov     edi,0

```

```

ADDRESS/
or      ch,el      Charge and Range Load Error
or      ap,el      Aperture Error
or      el,500     Error that I did enter a
bits for status complete
Call  Convergence

```

```

Classification:
  src  An IPv4 address (Free Class)
  dst  An IP address (Free to write)
  cell  One of the cells (Only updated)

```

0000	00	1000000000000000
0001	01	1000000000000000
0010	10	1000000000000000
0011	11	1000000000000000
0100	00	1000000000000000
0101	01	1000000000000000
0110	10	1000000000000000
0111	11	1000000000000000
1000	00	1000000000000000
1001	01	1000000000000000
1010	10	1000000000000000
1011	11	1000000000000000
1100	00	1000000000000000
1101	01	1000000000000000
1110	10	1000000000000000
1111	11	1000000000000000

[illegible]

Predicting future changes
By studying trend to be downward,
Upward, stable, or oscillating.

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

122. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of: a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate. (U)

(M) a a clock manager ...

The Clock Manager – receives control signal from temperature controller

DoK8ThermalRead: ;
; Try for a Thermal Management hit: return time count = 0

then
; we had one, else we need to leave it along.

The Temperature Controller

```

call    UpdateTemperature ;Do it
mov     al,1ah
call    CmosRead          ;Read Temperature byte
mov     al,ah              ;Direction/Time/Level
and     ah,0ah             ;Just the time and level

```

```

please
mov     bh,al              ;Get the direction
and     al,7               ;Level computed for Temp
range
and     bh,11000000b       ;Direction

```

```

cap     ah,0               ;Good read?
jne     LeaveDownCountT    ;No, leave it alone

```

Leaves clock speed the same

```

; This is where we do some thermal management
; Hold ah value or reset it as needed...

```

```

cap     bh,11000000b       ;OSC?
jne     NotTR_OSC          ;No!

```

Inventor: [redacted]
For priority: [redacted]
By: 015/1994

EXHIBIT I-2

EXHIBIT V-98

122. (Previously presented) An apparatus, comprising:

a **temperature controller (T)** for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a **clock manager (M)** adapted to receive a control signal from said temperature controller, said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of: a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate. (U)

(U) ... said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of:
a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate.

```
; OSC, so set the temp level up by one
;
mov     bh,00000060b           ;Force downward
cmp     al,7                   ;Already at max?
je      NotTR_OSC              ;yes, leave alone
inc     al                     ;force level temp up by one
NotTR_OSC:
;
; Time needs to be set based on T Level
;
mov     ah,7                   ;Max available
and     ah,al                   ;7-7 = 0 so watch in:
cmp     ah,0
jns     NotBig2                 ;Not zero
inc     ah                     ;Look at every minute
NotBig2:shl     ah,3             ;Align the time constant
or      ah,bh                   ;Align the direction
or      ah,al                   ;Align the TRange
mov     di,al                   ;TRange
mov     bh,0                    ;Upper index.
;
; Need to setup the Data Value based on current TRange.
;
push    ax

IFDEF   rzllilyp                ;S.DR.1 6-3-95:W Set Data
Value
mov     ah,byte ptr cs:TDataTab[bx]
mov     al,bh                   ; Index register to write
call    CfgWrite
```

When OSC is
already at max,
force level temp
up by one

Rising or Lowering at
Acceptable rate, if
index goes down,
clock speed goes up-
Clock frequency
increases. Direction
will indicate downward
trend.

Computes Clock
Speed

Receive clock
speed to set for
processor (CPU)

122. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of: a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate. (U)

(U) ... said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of:
a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate.

Modifies clock speed, clock frequency

Need to setup the Data Value based on current Temp

```
IFDEF xylilyp          05-08-1 6-3-95w Set Data
value
mov sh,byte ptr ds:[Writable,bx]
mov si,24h           ; Index register to write
call CXTWRITE
ENDIF xylilyp
```

```
IFDEF xylilyd          05-08-1 6-3-95w add data
code here
ENDIF xylilyd
```

```
pop bx               ; Minutes to next exec
WaitPowerDownCall:
mov si,24h
call CXTWRITE        ; Write it out
LeavePowerDownCall:
pop bx
pop si
pop di
pushf                ; Restore interrupts
ret
```

```
Writable:
db 20h               ; Disabled
db 18h               ; 1 sec's
db 10h               ; 1/2 sec
db 28h               ; 1/2 sec
db 28h,28h,28h,28h,28h ; 4.48s 5-11-89
db 28h               ; 1/4 sec
```

EXHIBIT L-3

TempRange	180d	byte
5(TempRange)	180d	byte
db	00h	Level 1
db	00h	Level 1
db	10h	Level 2
db	10h	Level 2
db	20h	Level 3
db	20h	Level 3
db	30h	Level 4
db	30h	Level 4
db	40h	Level 5
db	40h	Level 5
db	50h	Level 6
db	50h	Level 6
db	60h	Level 7
db	60h	Level 7
AltTempRange	180d	byte
db	10h	Level 1
db	10h	Level 1
db	20h	Level 2
db	20h	Level 2
db	30h	Level 3
db	30h	Level 3
db	40h	Level 4
db	40h	Level 4
db	50h	Level 5
db	50h	Level 5
db	60h	Level 6
db	60h	Level 6
db	70h	Level 7
db	70h	Level 7

spoteTemperature group

EXHIBIT L-4

Note: The Macro "IFDEF" was added on 6-3-95 because
This code was used for another Product also called lilyd. The
original code that was Working by 9/13/94 is there, the Macro for
lilyd does not have Any code generation as of yet Here since it
was not written for The new product. As faster processors were
added to lilyd products, the tables changed to under them also
(see 4.48b 5-11-95)

Reference Temperature

EXHIBIT V-100

122 (Previously presented) An apparatus, comprising:

a **temperature controller** (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a **clock manager** (H) adapted to receive a control signal from said temperature controller, said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of: a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate. (U)

(U) ... said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of:
a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate.

EXHIBIT I-3

```

;
;      OSC, so set the temp level up by one
;
      mov     bh,00000000b      ;force downward
      cmp     al,7              ;Already at max?
      je      NotTR_GSC         ;yes, leave alone
      inc     al                ;force level temp up by one
NotTR_GSC:
;
;      Time needs to be set based on T Level
;
      mov     ah,7              ;Max available
      sub     ah,al             ;7-7 = 0 so watch it!
      cmp     ah,0
      jne     NotBigZ          ;Not zero
      inc     ah                ;Look at every minute
NotBigZ:shl     ah,1            ;Align the time constant
      or      ah,bh             ;Align the direction
      or      ah,al             ;Align the TRange
      mov     bl,al             ;TRange
      mov     bh,0             ;Upper index.

```

Tlevel sets time – based on acceptable level of temperature rise or fall (direction gives rise or fall, and TRange give temperature Low and Max in range.

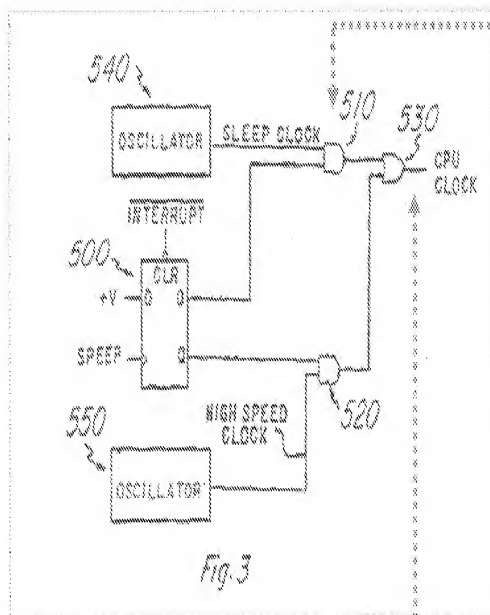
Acceptable rate is time and temperature based dependent on direction of trend.

EXHIBIT V-101

122. (Previously presented) An apparatus, comprising:

a temperature controller (T) for monitoring temperature within said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of: a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate. (U)

(U) ... said clock manager selectively raising the frequency of clock signals being sent to a processing unit when one of:
a) said monitored temperature drops to at least a selected reference temperature, and b) said predicted changes in said monitored temperature are at an acceptable rate.



Rising faster than
Acceptable rate,
forces second
clock signal

Computes Clock
Signal

Receive a First or
Second clock
signal

Claim 123

123. (New) An apparatus, comprising:

a **temperature controller (T)** for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a **clock manager (M)** adapted to receive a control signal from said temperature controller, said clock manager selectively **stripping clock signals from being sent to a processing unit** when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(T) a **temperature controller ...**

The Clock Manager – receives control signal from temperature controller

DoxThermalRead:

```

    try for a Thermal Management hit: return time count = 0
    then
        we had one, else we need to leave it along.

```

The Temperature Controller

```

    call .UpdateTemperature    ;do it
    mov     al,0ah
    call    CmosRead           ;Read Temperature byte
    mov     si,ah              ;Direction/Time/Level...
    and     ah,0ah             ;Just the time and level

    please
    mov     bh,al              ;Get the direction
    and     al,7               ;Level computed for Temp
    range
    and     bh,11000000b       ;Direction

    cmp     ah,0               ;Good read?
    jne     LeaveDowsCount?    ;Nop, leave it alone

    ; This is where we do some thermal management
    ; Hold ah value or reset it as needed...

    cmp     bh,11000000b       ;OSC?
    jne     NotIR_OSC         ;Nop!

```

Leaves clock speed the same.

Exhibit 1-2
Exhibit V-103
By 01/15/24

EXHIBIT 1-2

EXHIBIT V-103

123. (New) An apparatus, comprising:

a **temperature controller (T)** for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a **clock manager (M)** adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(T) a temperature controller ...

The Temperature
Controller

EXHIBIT I-4

```

:      Read the Temperature on the system board controlled by
Keyboard Controller
:
:      Calling Arguments
:
:      call  UpDateTemperature
:      ON exit, the cmos parameter will contain the correct
values

```

CMOS Parameter
Temperature = 37.00C

```

*** mov    al,0x1b          ;Output the read A/D.
*** cmp    eax,81           ;
; testadc_1:
; loop     testadc_1_0x04    ;10-99w Don't Ramp here!
; jmp      ClearBusyKeyChannel ;10-99-99wShould we flush
;
; here?
; testadc_1_0x04:          ;1-30-99w
; jmw      1+1
; *** jmp    al,04h         ;read status port
; jmw      1+1
; jmp      1+1
; test     al,1             ;check status of input port
;
; *** jmp    al,04h         ;full, then, get A/D value
; cmp      al,0ffh          ;valid value?
; je        ClearBusyKeyChannel ;nop! 1-17-99w
;          ;SEMG CODE..WATS 1-12-99w INACTIVE
; cmp      al,04h
; je        ClearBusyKeyChannel ;nop! 1-17-99w
; push     eax
; mov      ah,55h
; xchg     al,ah

```

EXHIBIT I-5

EXHIBIT I-6

Reads Temperature for
starting point

Register al contains temperature

Channels 64 was changed to 54 and 60 was changed to 59 after 9/15/94. Does not affect invention, just make product work better for multitasking operating systems. Same temperature was obtained either way. Channels 60 and 64 used for FCC and UL agency testing. Implementation was functional and complete for patent purpose by 9/15/94.

125. (New) An apparatus, comprising

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(T) a temperature controller ...

The Temperature
Controller

EXHIBIT I-8

```
SetRange:
~ * xchg  al,cl          ;Al has temp back; ah=index
  mov     cx,7           ;cx = loop count

ScanRange:
  mov     bx,cx
  add     bl,ah           ;Over index for sc or dc
  cmp     al,byte ptr cs:[TempRange+bx]
  jg      FoundRange      ;cx=range number found
  loop    ScanRange

FoundRange:
                                ;cx=range number found
```

Temperature for starting
point - Register al contains
temperature

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123. (New) An apparatus comprising:

a **temperature controller** (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a **clock manager** (M) adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(T) a temperature controller ...

```

GetRange:
    mov     al,cl                ;Al has temp back; afterward
    mov     cx,7                ;cx = loop count

ScanRange:
    mov     bx,cx
    add     bx,bx                ;Over index for ax or dx
    cmp     al,byte ptr cs:[tempRange+bx]
    jg      foundRange          ;overrange number found
    loop    ScanRange

foundRange:
    ;[tempRange, OVERRANGE, found]

    mov     al,0x00             ;Read Keyboard channel
    outsb   dx,al
    call    CmpKey
    mov     al,0x00
    and     al,1                ;Last Temperature range
    mov     ah,0x00             ;Upper direction trend value
    cmp     cl,al                ;Value of CMOS read
    je      RangeStable         ;Stable process, same range
    jg      RangeUpward         ;New range is greater than

;                               ;Range is downward trend
    cmp     sb,0x00000000h       ;(Stable upward)
    je      RangeUpward         ;Yes, found asc
    mov     ch,0x00
    jmp     short AllRange

RangeStable:
    mov     ch,0x00h            ;OSC flag
    jmp     short AllRange

RangeUpward:
    mov     ch,0x00h
    jmp     short AllRange

RangeDownward:
    cmp     sb,0x00000000h       ;Last one Downward?
    je      RangeOSC            ;Yes, Osc found
    mov     ch,0x00

```

AllRange:
 or dx,cl ;Range and lower temp trend
 mov ah,cl
 mov al,0x00
 bpb for status complete
 call CmpKey

ClearTempChannel:
 mov ax,0x0000h ;Free Channel
 mov dx,0x0000h ;Back to write
 outd dx,ax
 mov dx,tempBase
 bpb tempBase

GetTempChannel:
 mov dx,0x0000h ;Free Channel
 mov dx,0x0000h ;Back to write
 outd dx,ax
 mov dx,tempBase
 bpb tempBase

GetTempChannel:
 mov dx,0x0000h ;Free Channel
 mov dx,0x0000h ;Back to write
 outd dx,ax
 mov dx,tempBase
 bpb tempBase

EXHIBIT V-9

Predicting future changes
By studying trend to be downward,
Upward, stable, or oscillating.

TEMPERATURE TRENDS
FOR THE TEMPERATURE CONTROLLER

123 (New) An apparatus, comprising:

a **temperature controller** (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a **clock manager** (M) adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(M) a clock manager

The Clock Manager - receives control signal from temperature controller

DoXBThermalRead:

Try for a Thermal Management hit: return time count = 0

then

we had one, else we need to leave it along.

The Temperature Controller

call UpdateTemperature ;Do it

mov al,1ah

call CmosRead

;Read Temperature byte

mov al,ah

;Direction/Time/Level

and ah,1ah

;Just the time and level

please

mov bh,al

;Get the direction

and al,7

;Level computed for Temp

range

and bh,11000000b

;Direction

cmp ah,0

;Good read?

jne LeaveDownCount?

;No, leave it alone

Leaves clock speed the same

This is where we do some thermal management

Hold ah value or reset it as needed...

cmp bh,11000000b

;OSC?

jne NotTR_OSC

;No!

EXHIBIT V-107

EXHIBIT V-107

EXHIBIT V-107

EXHIBIT V-107

EXHIBIT V-107

123. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature of least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M): adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(U) ... said clock manager selectively stopping clock signals from being sent to a processing unit when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature

```

:      OSC, so set the temp level up by one
:
mov     bh,0000000b      ;Force downward
cmp     al,7             ;Already at max?
je      NotTR_OSC        ;yes, leave alone
inc     al               ;force level temp up by one
NotTR_OSC:
:
:      Time needs to be set based on T Level
:
mov     ah,7             ;Max available
sub     ah,al            ;7-? = 0 so watch it!
cmp     ax,0
jns     NotBig2          ;Not zero
inc     ah               ;look at every minute
NotBig2:
mov     ah,3             ;Align the time constant
or      ah,bh            ;Align the direction
or      ah,al            ;Align the TRange
mov     bl,al            ;TRange
mov     bh,0             ;Upper index.
:
:      Need to setup the Doze Value based on current TRange
:
push    ex

IFDEF   rzzlllyp          ;S.O.B.1 6-T-95v Set Doze
value
mov     ah,byte ptr cs:TDozeTable[bx]
mov     al,54h           ; Index register to write
call    CfgWrite

```

TEMPERATURE
 CONTROLLER
 (T)

Rising or Lowering at
 Acceptable rate, if
 index goes down,
 clock speed goes up-
 Clock frequency
 increases. Direction
 will indicate upward
 trend.

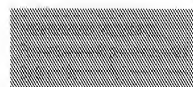
Computes Clock
 Speed

Receive clock
 speed to set for
 processor (CPU)

123. (New) An apparatus, comprising:

a **temperature controller** (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature, and
 a **clock manager** (M) adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(U) ... said clock manager selectively stopping clock signals from being sent to a processing unit when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature



```

;
;      OSC, so set the temp level up by one
;

```

```

mov     bh,0000000b           ;force downward
;
;      cmp     al,7             ;Already at max?
;      je      NotTR_OSC       ;yes, leave alone
;      inc     al               ;Force level temp up by one

```

EXHIBIT I-3

```

NotTR_OSC:

```

```

;
;      Time needs to be set based on T Level
;

```

```

mov     ah,7                   ;Max available
sub     ah,al                   ;7-7 = 0 so watch it!
cmp     ah,0
jne     NotBigZ                 ;Not zero
inc     ah                      ;Look at every minute
NotBigZ:shl     ah,3             ;Align the time constant
or      ah,bh                   ;Align the direction
or      ah,al                   ;Align the TRange
mov     bl,al                   ;TRange
shr     bh,3                     ;Slipper index..

```

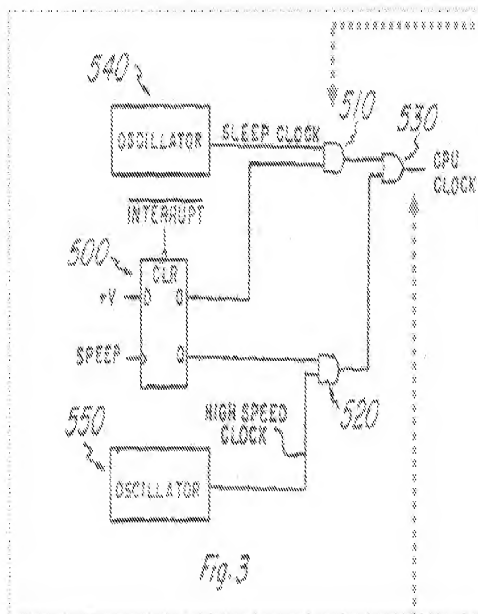
Tlevel sets time – based on acceptable level of temperature rise or fall
 (direction gives rise or fall, and TRange give temperature Low and Max in range.
 Acceptable rate is time and temperature based dependent on direction of trend.

EXHIBIT V-110

123. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(U) ... said clock manager selectively stopping clock signals from being sent to a processing unit when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature



Rising faster than
Acceptable rate,
forces second
clock signal

Computes Clock
Signal

Receive a First or
Second clock
signal

Claim 124

124. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and

a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (S)

Claim 124

124. (New) An apparatus comprising

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature (U)

(T) a temperature controller ...

The Clock Manager – receives control signal from temperature controller

DoThermalRead:

: Try for a Thermal Management hit: return time count = 0

then

: we had one, else we need to leave it along.

The Temperature Controller

: call UpdateTemperature :Do it
: mov al,1ah

: call CmosRead :Read Temperature byte
: mov al,ah :Direction/Time/Level
: and ah,0fh :Just the time and level

please

: mov bh,al :Get the direction
: and al,7 :Level computed for Temp
range
: and bh,11000000h :Direction

: cmp ah,0 :Good read?
: jne LeaveDownCount? :Nop, leave it alone

Leaves clock speed the same

: This is where we do some thermal management
: hold ah value or reset it as needed...

: cmp bh,11000000h :OSC?
: jna NotTR_OSC :Nop!

EXHIBIT I-2

EXHIBIT V-113

124. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed when said monitored temperature rise to at least a selected reference temperature and thereafter continues to use on successive readings of said monitored temperature (U)

(T) a temperature controller ...

The Temperature Controller

EXHIBIT I-4

```

/
:      Read the Temperature on the system board controlled by
Keyboard Controller
:
:      Calling Arguments
:
:      Call  UpdateTemperature
:      ON exit, the CMOS parameter will contain the correct
values

```

Implementation functional
For use in patent purposes

```

mov     si,00ch          ;Output the read A/D.
out     140,si
testb   r1
loop    testb_r1_key     ;1-10-95w? Don't busy here
jnp     ClearBusyKeyChannel ;1-10-95w? Should we flush
here?
testb   r1_key          ;1-10-95w
jnp     jnp_0+2
in      si,010h          ;read status port
shl     si,1
jnp     jnp_0+2
test    si,2             ;check status of input port

```

```

in      si,10h           ;Call: then, get A/D value
cmp     si,00fh          ;valid value?
je      ClearBusyKeyChannel ;nop: 1-10-95w
;DURING CODE...Waits 1-10-95w INACTIVE
mov     si,60h
jz      ClearBusyKeyChannel ;nop: 1-10-95w
push    ax
mov     ah,55h
xchg    al,ah

```

EXHIBIT I-5

EXHIBIT I-6

Reads Temperature for starting point

Register al contains temperature

Channel 64 was changed to 54 and 60 was changed to 60 after 6/16/94. Does not affect invention. just make product work better for multitasking operating systems. Same temperature was obtained either way. Channels 60 and 64 used for FCC and UL agency testing. Implementation was functional and complete for patent purpose by 6/15/94

EXHIBIT V-114

124. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (U) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(T) a temperature controller ...

The Temperat
Controller

EXHIBIT 1-8

```
SetRange:
~ > xchg  al,cl          ;Al has temp back; ah=index
mov      cx,7           ;cx = loop count

ScanRange:
mov      bx,cx
add      bl,ah           ;Over index for ac or dc
cmp      al,byte ptr cs:[TempRange+bx]
jg       FoundRange     ;cx=range number found
loop     ScanRange

FoundRange:
;cx=range number found
```

Temperature for starting
point - Register al contains
temperature

TEMPERATURE CONTROLLER
FOR MONITORING AND PATENT PURPOSES
BY MICHAEL J. JONES

124. (New) An apparatus comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(T) a temperature controller

```
SetRange:
mov al,01          ;Al has temp back; shwindex
mov cx,7            ;cx = loop count
```

```
ScanRange:
mov bx,0x           ;Over index for so or do
add bl,ah            ;Value of temp back; shwindex
cmp al,byte ptr cs:[TempRange+bx]
je FoundRange        ;FoundRange number found
loop ScanRange
```

```
FoundRange:
mov esi,0x00000000 ;TempRange index found
```

```
mov al,0x01         ;Read Keyboard channel
cld
mov edi,esi
mov esi,0x00000000 ;Last Temperature Range
mov edi,esi          ;Upper direction trend value
mov edi,esi          ;Value of temp back
cmp al,0x01          ;Rotable process, same range
je RangeStable
je RangeUpward
```

```
cmp ah,0x00000000 ;Range is downward trend
je RangeUpward ;Last time upward?
```

```
mov edi,esi          ;Yes, found one
```

```
mov edi,esi          ;Range is downward trend
```

```
mov edi,esi          ;Last time upward?
```

```
mov edi,esi          ;Yes, found one
```

```
mov edi,esi          ;Range is downward trend
```

```
mov edi,esi          ;Last time upward?
```

```
mov edi,esi          ;Yes, found one
```

```
AlRange:
mov al,0x01          ;Range and range temp back
mov al,0x01          ;Range and range temp back
mov al,0x01          ;Range and range temp back
mov al,0x01          ;Range and range temp back
```

```
Channel-KeyChannel:
mov al,0x01          ;Free Channel
mov al,0x01          ;Free Channel
mov al,0x01          ;Free Channel
mov al,0x01          ;Free Channel
```

```
KeyChannel:
mov al,0x01          ;Free Channel
mov al,0x01          ;Free Channel
mov al,0x01          ;Free Channel
mov al,0x01          ;Free Channel
```

```
mov al,0x01          ;Free Channel
```

EXHIBIT 1-8

Trend up, last up and this up more than last time, forcing index in TDozeTable to increase and this will decrease clock speed and clock frequency.

Predicting future changes
By studying trend to be downward,
Upward, stable, or oscillating.

124. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature (U)

(M) a a clock manager ...

The Clock Manager - receives control signal from temperature controller

The Temperature Controller

```

DoXHTermalRead: 1
;
; Try for a Thermal Management hit: return time count = 0
;
; then
;
; we had one, else we need to leave it along.
;
;
; call UpdateTemperature ;Do it
; mov al,0ah
;
; call CmosRead ;Read Temperature byte
; mov al,ah ;Direction/Time/Level
; and ah,0ah ;just the time and level
;
; please
; mov bh,al ;Get the direction
; and al,7 ;Level computed for Temp
; range
; and bh,11000000b ;Direction
;
; cap ah,0 ;Good read?
; jne LeaveDownCount ;Wop, leave it alone
;
; This is where we do some thermal management
;
; Hold ah value or reset it as needed...
;
; cap bh,11000000b ;OSC?
; jne NotTR_OSC ;No!

```

Leaves clock speed the same

Exhibit Information
For Docty and Power
By 01/19/04

EXHIBIT I-2

EXHIBIT V-117

124. (New) An apparatus comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature (U)

(U) ... said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature.

```

;
;   OSC, so set the temp level up by one
;
mov     bh,00000000b           ;Force downward
cmp     al,7                   ;Already at max?
je      NotTR_OSC              ;yes, leave alone
inc     al                     ;force level temp up by one
NotTR_OSC:
;
;   Time needs to be set based on T Level
;
mov     ah,7                   ;Max available
sub     ah,al                   ;7-7 = 0 so watch it!
cmp     ah,0
jne     NotBig2                ;Not zero
inc     ah                     ;Clock at every minute
NotBig2:shl     ah,3             ;Align the time constant
or      ah,bh                  ;Align the direction
or      ah,al                   ;Align the TRange
mov     bl,al                   ;TRange
mov     bh,0                   ;Upper index.
;
;   Need to setup the Doze Value based on current TRange
;
push    ax

IFDEF    rzllilyp               ;5.08.1 6-3-95w Set Doze
value
mov     ah,byte ptr cs:TDozeTable[bx]
mov     al,54h                 ; Index register to write
call    cfigWrite

```

TEMPERATURE CONTROLLER
T
TEMPERATURE MONITOR
M

Rising faster than
Acceptable rate,
forces lower
clock speed

Computes Clock
Speed

Receive clock
speed to set for
processor (CPU)

124. (New) An apparatus, comprising:

a temperature controller (i) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature, and
 a clock manager (ii) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(U) ... said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature.

124. (New) An apparatus, comprising:
 a temperature controller (i) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature, and
 a clock manager (ii) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

EXHIBIT I-3

```

;
;
;      OSC, so set the temp level up by one
;
mov     bh,0000000b      ;force downward
cmp     al,7             ;Already at max?
je      NotTR_OSC        ;yes, leave alone
inc     al               ;force level temp up by one
NotTR_OSC:
;
;      Time needs to be set based on T Level
;
mov     ah,7             ;Max available
sub     ah,al            ;7-? = 0 so watch it:
cmp     ah,0
jne     NotBig2          ;Not zero
inc     ah               ;Look at every minute
NotBig2:shl     ah,1      ;Align the time constant
or      ah,bh            ;Align the direction
or      ah,al            ;Align the TRange
mov     di,al            ;TRange
mov     ch,0             ;upper index.

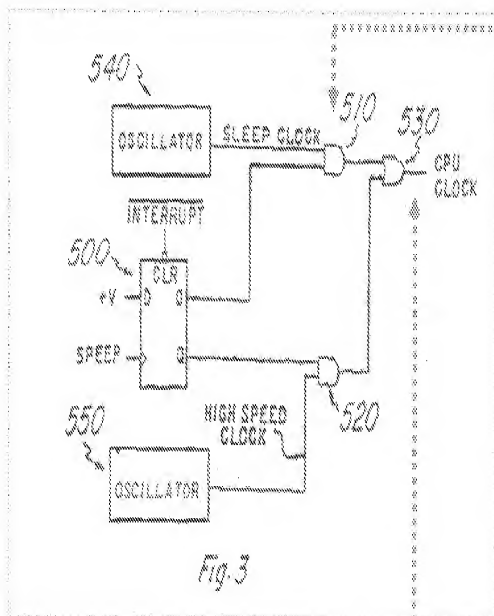
```

Tlevel sets time – based on acceptable level of temperature rise or fall (direction gives rise or fall, and TRange give temperature Low and Max in range. Acceptable rate is time and temperature based dependent on direction of trend.

124. (New) An apparatus, comprising,

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature. (U)

(U) ... said clock manager reducing processing unit clock speed when said monitored temperature rises to at least a selected reference temperature and thereafter continues to rise on successive readings of said monitored temperature.



Rising faster than
Acceptable rate,
forces second
clock signal

Computes Clock
Signal

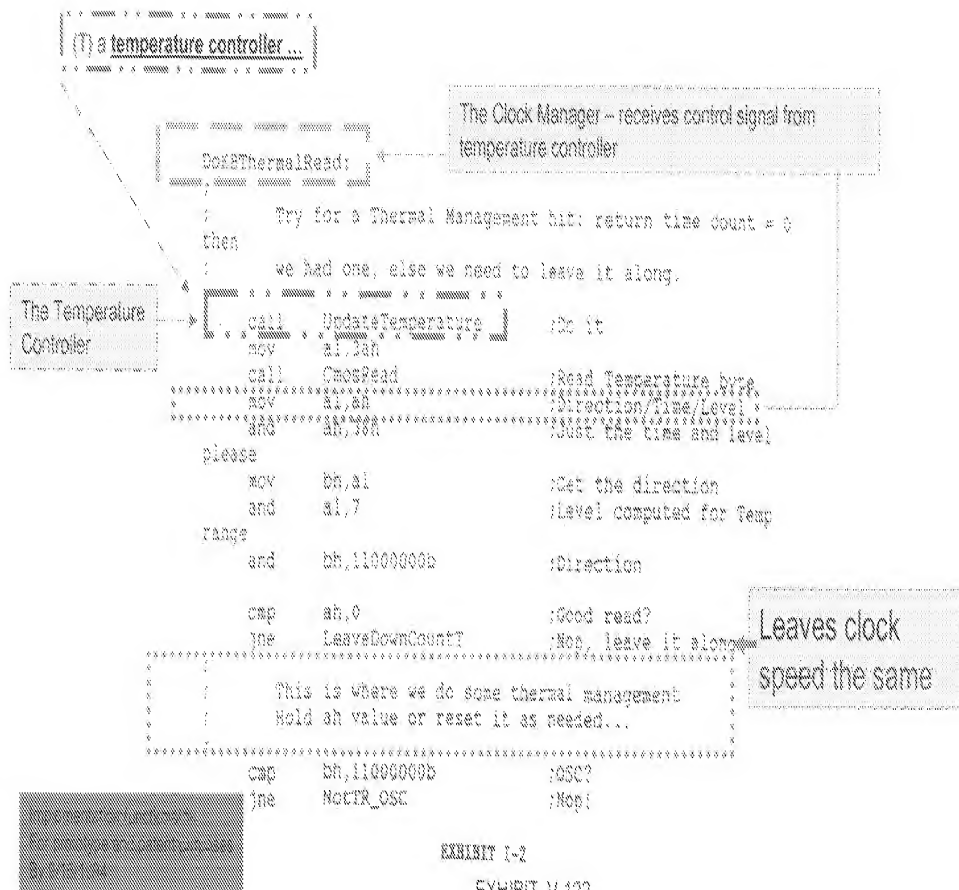
Receive a First or
Second clock
signal

Claim 125

125. (New) An apparatus, comprising:

a temperature controller (7) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and

a clock manager (8) adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit in response to successive readings of said monitored temperature indicating an upward trend in temperature. (9)



125. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively slipping clock signals from being sent to a processing unit in response to successive readings of said monitored temperature indicating an upward trend in temperature. (U)

(T) a temperature controller ...

The Temperature
Controller

EXHIBIT I-4

Read the Temperature on the system board controlled by
Keyboard Controller
Calling Arguments
call UpDateTemperature
ON exit, the cmos parameter will contain the correct
values

Temperature Controller
Function and Parameters

```

mov     al,0x40          ;output the read A/D.
**** out     0x40,al          ;call, then, get A/D value
; testbu_1:
; loop     testbu_2_0xay      ;1-10-95wv Don't hang here
; jmp     clearBusyKeyChannel ;1-10-95wv should we clear
; here?
; testbu_2_0xay:             ;1-10-95wv
; jmp     0x40              ;1-10-95wv
; **** in     0x40             ;read status port
; jmp     0x40              ;1-10-95wv
; jmp     0x40              ;1-10-95wv
; test     al,1             ;check status of input port

```

EXHIBIT I-4

EXHIBIT I-4

Reads Temperature for
starting point

Register al contains temperature

Channels 64 was changed to 64 and 60 was changed to 60 after 9/15/04. Does not affect invention, just make product work better for
multiflash operating systems. Same temperature was obtained either way. Channels 60 and 64 used for FCC and UL agency testing.
Implementation was functional and complete for patent purpose by 9/10/04

EXHIBIT V-123

125 (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit in response to successive readings of said monitored temperature indicating an upward trend in temperature. (U)

(T) a temperature controller ...

The Temperature
Controller

EXHIBIT 1-8

```

SetRange:
    xchg  al,cl                ;Al has temp back; ah=index
    mov   cx,7                ;cx = loop count

ScanRange:
    mov   bx,cx
    add   bl,ah                ;Over index for ac or dc
    cmp   al,byte ptr cs:[TempRange+bx]
    jg    FoundRange          ;cx=range number found
    loop  ScanRange

FoundRange:
    ;cx=range number found
    
```

Temperature for starting
point - Register al contains
temperature

EXHIBIT 1-8
Temperature for starting
point - Register al contains
temperature

125 (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit in response to successive readings of said monitored temperature indicating an upward trend in temperature. (U)

*** x x x x x x x x x x ***
(T) a temperature controller ...
*** x x x x x x x x x x ***

```
SetRange:
mov  al,01          ;(Al has temp back) store index
mov  cx,7            ;cx = loop count
```

```
ScanRange:
mov  bx,0x          ;Over index for an or dx
add  bx,0b          ;Over index for an or dx
cmp  al,byte ptr ds:[tempRange+bx]
jz   foundRange     ;Overrange number found
inc  bx
loop ScanRange
```

```
FoundRange:
;overrange number found
```

```
mov  al,00h         ;Read Keyboard channel
cld
cld
mov  al,0b          ;Last Temperature range
add  al,0b00h       ;Upper direction trend value
cmp  al,al          ;Value of cma read
ja   RangeStable    ;Stable process, same range
ja   RangeUpward    ;New range is greater than
```

```
old one
```

```
mov  ax,00000000h   ;Range is downward trend
```

```
jz   RangeUpward   ;Restore upward?
```

```
mov  ch,01h        ;Yes, found one
```

```
jmp  short AllRange
```

```
RangeStable:
mov  cx,0000h       ;RST flag
```

```
jmp  short AllRange
```

```
RangeUpward:
mov  ch,00h
```

```
jmp  short AllRange
```

```
RangeDownward:
mov  ax,01000000h   ;Last one downward?
```

```
jz   RangeUpward   ;Yes, One found
```

```
mov  dx,10
```

```
AllRange:
or   dx,01          ;Range and range temp trend
mov  dx,01
mov  al,0a          ;More stop 1 dir later?
bits for status complete
call CmaWrite
```

```
ClearKeyChannel:
mov  dx,0000h       ;Free channel
mov  al,00000000h   ;Back to value
call CmaWriteKey
```

```
KeyChannel:
mov  dx          ;11-10-1000
mov  dx          ;11-10-1000
mov  dx          ;11-10-1000
```

```
mov  dx          ;Restore status and
```

EXHIBIT 1-4

Predicting future changes
By studying trend to be downward,
Upward, stable, or oscillating.

FOR THE UNITED STATES PATENT
OFFICE

125 (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (H) adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit in response to successive readings of said monitored temperature indicating an upward trend in temperature. (U)

(H) a a clock manager ...

The Clock Manager - receives control signal from temperature controller

DoXThermalRead:

```

; Try for a Thermal Management hit: return time count = 0
then
; we had one, else we need to leave it along.

```

The Temperature Controller

```

; call . UpdateTemperature ; do it
mov     al,bh
call    CmosRead           ;Read Temperature byte.
;mov     al,ah              ;Direction/Time/Level
and     ah,7d4             ;Just the time and level

```

```

please
mov     bh,al              ;Get the direction
and     al,7               ;Level computed for Temp
range
and     bh,11000000b       ;Direction

```

```

cmp     ah,0               ;Good read?
jne     LeaveDownCountT    ;No, leave it alone

```

Leaves clock speed the same

```

; This is where we do some thermal management
; Hold ah value or reset it as needed...

```

```

cmp     bh,11000000b       ;OSC?
jne     NotTR_OSC          ;Nop!

```

Independent of
 For more, please see
 BY 1/15/194

EXHIBIT I-2

EXHIBIT V-126

125. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit in response to successive readings of said monitored temperature indicating an upward trend in temperature. (U)

(U) ... said clock manager selectively stopping clock signals from being sent to a processing unit in response to successive readings of said monitored temperature indicating an upward trend in temperature.

```

; OSC, so set the temp level up by one
;
mov     bh,00000000h           ;force downward
cmp     al,7                   ;Already at max?
je      NotTR_OSC              ;yep, leave alone
inc     al                     ;Force level temp up by one
NotTR_OSC:
;
; Time needs to be set based on T Level
;
mov     ah,7                   ;Max available
sub     ah,al                   ;7-? = 0 so watch it!
cmp     ab,0
jne     NotBig3                ;Not zero
inc     ah                     ;Look at every minute
NotBig3:shl     ah,1            ;Align the time constant
or      ah,bh                  ;Align the direction
or      ah,al                   ;Align the TRange
mov     di,al                   ;TRange
mov     bx,0                   ;Upper index.
;
; Need to setup the Doze Value based on current TRange
;
push    ax

IFDEF   x86_64
; 5.08.1 6-1-95w Set Doze
value
mov     ah,byte ptr cs:TDozeTable[bx]
mov     al,54h                 ; Index register to write
call    cfgWrite

```

Rising or Lowering at Acceptable rate. If index goes down, clock speed goes up. Clock frequency increases. Direction will indicate upward trend.

Computes Clock Speed

Receive clock speed to set for processor (CPU)

125. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager selectively stopping clock signals from being sent to a processing unit in response to successive readings of said monitored temperature indicating an upward trend in temperature. (U)

(U) ... said clock manager selectively stopping clock signals from being sent to a processing unit in response to successive readings of said monitored temperature indicating an upward trend in temperature.

EXHIBIT I-3

OSC, so set the temp level up by one

```

mov     bh,0000000b      ;force downward
cmp     al,7              ;Already at max?
jbe     NotTR_OSC        ;Yep, leave alone
inc     al                ;force level temp up by one
NotTR_OSC:

```

Time needs to be set based on T Level

```

mov     ah,7              ;Max available
sub     ah,al              ;7-7 = 0 so watch it!
cmp     ah,0
jne     NotBig2            ;Not zero
inc     ah                ;Look at every minute
NotBig2:shl     ah,3        ;Align the time constant
or      ah,bh              ;Align the direction
or      ah,al              ;Align the TRange
mov     cl,al              ;TRange
mov     ah,0              ;Upper Index.

```

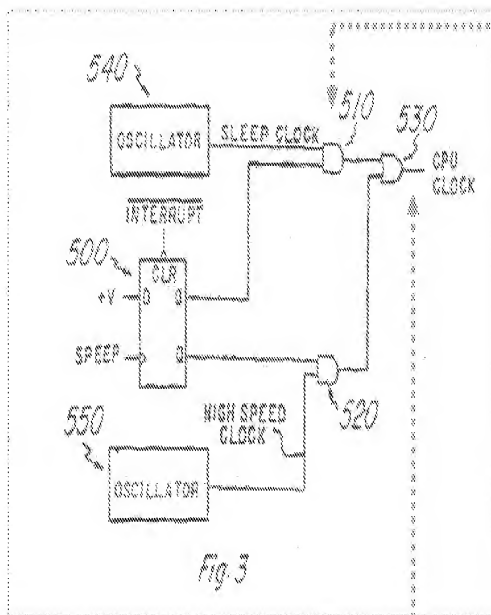
Tlevel sets time – based on acceptable level of temperature rise or fall (direction gives rise or fall, and TRange give temperature Low and Max in range. Acceptable rate is time and temperature based dependent on direction of trend.

EXHIBIT V-129

125. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (H) adapted to receive a control signal from said temperature controller; said clock manager selectively stopping clock signals from being sent to a processing unit in response to successive readings of said monitored temperature indicating an upward trend in temperature. (U)

(U) ... said clock manager selectively stopping clock signals from being sent to a processing unit in response to successive readings of said monitored temperature indicating an upward trend in temperature.



Rising faster than
Acceptable rate,
forces second
clock signal

Computes Clock
Signal

Receive a First or
Second clock
signal

Claim 126

126. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and

a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed in response to successive readings of said monitored temperature indicating an upward trend in temperature. (U)

(T) a temperature controller ...

The Clock Manager - receives control signal from temperature controller

DoK8ThermalRead:

```

    Try for a Thermal Management hit: return time count = 0
then
    we had one, else we need to leave it along.

```

The Temperature Controller

```

    call .UpdateTemperaturep ;Do it
    mov     al,bh
    call    CmosRead          ;Read Temperature byte
    ..... mov     al,ah          ;Direction/Time/Level
    ..... add     ah,10h        ;Shift the time and level
    pld     bh,ah
    mov     bh,al              ;Get the direction
    and     al,7               ;Level computed for Temp
    range
    and     bh,11000000b       ;Direction

    cmp     ah,0               ;Good read?
    jne     LeaveDownCount?    ;No, leave it along
    .....
    ; This is where we do some thermal management
    ; Hold ah value or reset it as needed,..
    .....
    cmp     bh,11000000b       ;OSC?
    jne     NotIR_OSC          ;No!

```

Leaves clock speed the same

Implementation Note:
For prototype and pre-production
By 9/15/1994

EXHIBIT I-2

EXHIBIT 131

+26 (Rend. An. 2598308, 09/09/2016)

a temperature controller [1] for monitoring temperature associated with apparatus, and using each monitored temperature as a starting point, predicting future changes in said monitored temperature and

a clock manager (11) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed in response to a negative reading of said monitored temperature indicating an upward trend in temperature (U)

(7) a temperature controller ...

The Temperature Controller

TABLE 14

Read the Temperature on the system board controlled by Keyboard Controller

Online Appendix

```

:      call UpdateTemperature
:
:      On exit, the cncs parameter will contain the correct
:      values

```

10. *Journal of the American Medical Association*, 1990; 263: 1033-1036.

```

mov     al,0x00             ;Output the read A/D.      **** In    al,0x00           ;Full. Then, get A/D value
**** out    $A0,$al
;
;function: out
;
;   input:  testADC_2_Okay          ;0-10-95w Don't hang here.      cmp     al,0xFF            ;valid value?
;   output: %eax                   ;0-10-95wShould we flush?  je      ClearBusyKeyChannel ;Nop: 0-17-95w
;                                     ;                     ;DEBING done. Starts 0-12-95w INACTIVE
;   return: %eax
;
testADC_2_Okay:              ;0-10-95w                      cmp     al,0x00           ;Nop
;
**** mov     %r15,%r16        ;                               mv     ClearBusyKeyChannel ;Nop: 0-17-95w
;
**** in      $1,0x00          ;read status port                push    ax
;
;   input:  %r15                 ;                               mov     $0,0x00
;   output: %r16                 ;                               xchg    %r15,%r16
;
;   test:   $1,0               ;check status of input core

```

5757-14

Reads Temperature for starting point

Register al contains temperature

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126. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed in response to successive readings of said monitored temperature indicating an upward trend in temperature. (U)

(T) a temperature controller ...

The Temperature
Controller

EXHIBIT I-8

```

SetRange:
    xchg    al,ci          ;Al has temp back; ah=index
    mov     cx,7           ;cx = loop count

ScanRange:
    mov     bx,cx
    add     bl,ah          ;Over index for ac or dc
    cmp     al,byte ptr cs:[TempRange+bx]
    jg      FoundRange    ;cx=range number found
    loop    ScanRange

FoundRange:
    ;cx=range number found
    
```

Temperature for starting
point - Register al contains
temperature

For information only
For example and patent purposes
only

a **temperature controller** (7) for monitoring temperature associated with apparatus and, using said monitored temperature as a start point, predicting future changes in said monitored temperature; and

a **clock manager** (8) adapted to receive a control signal from said temperature controller, said clock manager receiving processing unit clock speed in response to successive readings of said monitored temperature indicating an upward trend in temperature; (9)

EXHIBIT V.134

126. (New) An apparatus, comprising

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and

a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed in response to successive readings of said monitored temperature indicating an upward trend in temperature (U).

(M) a clock manager ...

The Clock Manager - receives control signal from temperature controller

DoXThermalRead:

```

; Try for a Thermal Management hit: return time count = 0
then
; we had one, else we need to leave it alone.

```

The Temperature Controller

```

; *****
; call UpdateTemperature ;Do it
mov al,3ah
call CmosRead ;Read Temperature byte
mov al,ah ;Direction/Time/Level
and ah,3ah ;Just the time and level

```

```

please
mov bh,al ;Get the direction
and al,7 ;Level computed for Temp
range
and bh,11000000b ;Direction

```

```

cmp ah,0 ;Good read?
jne LeaveDownCount ;No, leave it alone

```

Leaves clock speed the same

```

; This is where we do some thermal management
; Hold ah value or reset it as needed...

```

```

cmp bh,11000000b ;OSC?
jne NotTE_OSC ;No!

```

Exhibit I-1
For prior art
By W15794

EXHIBIT I-2

EXHIBIT V-135

126. (New) An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature, at least once as a starting point, predicting future changes in said monitored temperature; and
a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed in response to successive readings of said monitored temperature indicating an upward trend in temperature (U)

(U) ... said clock manager reducing processing unit clock speed in response to successive readings of said monitored temperature indicating an upward trend in temperature.

```

:      OSC, so set the temp level up by one
:
:      mov     bh,00000000b      ;force downward
:      cmp     al,7              ;Already at max?
:      je      NotTR_OSC        ;yes, leave alone
:      inc     al                ;force level temp up by one
NotTR_OSC:
:
:      Time needs to be set based on T Level
:
:      mov     ah,7              ;Max available
:      sub     ah,al             ;7-2 = 0 so watch it!
:      cmp     ah,0
:      jne     NotBig2          ;Not zero
:      inc     ah               ;Look at every minute
NotBig2:shl     ah,7            ;Align the time constant
:      or      ah,bh            ;Align the direction
:      or      ah,al            ;Align the TRange
:      mov     dl,al            ;TRange
:      mov     bh,6             ;Upper index.
:
:      Need to setup the Dose Value based on current TRange
:
:      push    ax
:
:      IFDEF   zzalllyp          ;5.08.1 6-3-95w Set Dose
:      Value
:      mov     ah,byte ptr cs:TDataTable[bx]
:      mov     al,54h           ; index register to write
:      call    CfgWrite

```

US 2004/0171004 A1
US 2004/0171004 A1
US 2004/0171004 A1

Rising or Lowering at
Acceptable rate, if
index goes down,
clock speed goes up-
Clock frequency
increases. Direction
will indicate upward
trend.

Computes Clock
Speed

Receive clock
speed to set for
processor (CPU)

126. (New) An apparatus, comprising:

a temperature controller (7) for monitoring temperature associated with said apparatus, receiving data from said starting point, predicting future changes in said monitored temperature, and

a clock manager (8) adapted to receive a control signal from said temperature controller, said clock manager receiving periodic data from said clock in response to successive monitoring of said monitored temperature, predicting an upward trend in temperature (9)

(U) ... said clock manager reducing processing unit clock speed in response to successive readings of said monitored temperature indicating an upward trend in temperature.

Modifies clock speed, clock frequency

used to return the Date Value based on current Time

[illegible]

2000年12月15日

```
mov     al,byte ptr cs:[0x0000:0x0000]
mov     si,0x0000, index register to write
call    0x0000
```

[illegible]

1999 10/11/99 11:03:16 6-1-03:00 700 0000

2000 2001

2298 2299

Year	Age	Sex	Location	Notes
1978	10	M	...	...
1979	11	F	...	...
1980	12	M	...	...
1981	13	F	...	...
1982	14	M	...	...
1983	15	F	...	...
1984	16	M	...	...
1985	17	F	...	...
1986	18	M	...	...
1987	19	F	...	...
1988	20	M	...	...
1989	21	F	...	...
1990	22	M	...	...
1991	23	F	...	...
1992	24	M	...	...
1993	25	F	...	...
1994	26	M	...	...
1995	27	F	...	...
1996	28	M	...	...
1997	29	F	...	...
1998	30	M	...	...
1999	31	F	...	...
2000	32	M	...	...
2001	33	F	...	...
2002	34	M	...	...
2003	35	F	...	...
2004	36	M	...	...
2005	37	F	...	...
2006	38	M	...	...
2007	39	F	...	...
2008	40	M	...	...
2009	41	F	...	...
2010	42	M	...	...
2011	43	F	...	...
2012	44	M	...	...
2013	45	F	...	...
2014	46	M	...	...
2015	47	F	...	...
2016	48	M	...	...
2017	49	F	...	...
2018	50	M	...	...
2019	51	F	...	...
2020	52	M	...	...
2021	53	F	...	...
2022	54	M	...	...
2023	55	F	...	...
2024	56	M	...	...
2025	57	F	...	...
2026	58	M	...	...
2027	59	F	...	...
2028	60	M	...	...
2029	61	F	...	...
2030	62	M	...	...
2031	63	F	...	...
2032	64	M	...	...
2033	65	F	...	...
2034	66	M	...	...
2035	67	F	...	...
2036	68	M	...	...
2037	69	F	...	...
2038	70	M	...	...
2039	71	F	...	...
2040	72	M	...	...
2041	73	F	...	...
2042	74	M	...	...
2043	75	F	...	...
2044	76	M	...	...
2045	77	F	...	...
2046	78	M	...	...
2047	79	F	...	...
2048	80	M	...	...
2049	81	F	...	...
2050	82	M	...	...
2051	83	F	...	...
2052	84	M	...	...
2053	85	F	...	...
2054	86	M	...	...
2055	87	F	...	...
2056	88	M	...	...
2057	89	F	...	...
2058	90	M	...	...
2059	91	F	...	...
2060	92	M	...	...
2061	93	F	...	...
2062	94	M	...	...
2063	95	F	...	...
2064	96	M	...	...
2065	97	F	...	...
2066	98	M	...	...
2067	99	F	...	...
2068	100	M	...	...
2069	101	F	...	...
2070	102	M	...	...
2071	103	F	...	

Keywords: child sexual abuse; disclosure; social support

2007 84.38%

2011 80.00% 2012 80.00% 2013 80.00%

2. *Phylogenetic relationships*—Phylogenetic relationships were determined using the parsimony method of Farris (1993) with the program PAUP (version 4.0a; Farris, 1993). The parsimony method was chosen because of the lack of a priori knowledge of the relative importance of the morphological characters used in this study. The parsimony method was used to determine the most parsimonious tree (MPT) and to calculate the consistency index (CI) and retention index (RI) for the data set. The CI is a measure of the homoplasy in the data set, and the RI is a measure of the support for the MPT. The CI and RI were calculated using the program PAUP (version 4.0a; Farris, 1993). The MPT was determined using the program PAUP (version 4.0a; Farris, 1993). The MPT was determined using the program PAUP (version 4.0a; Farris, 1993).

28 39

XX

[illegible]

2005

[illegible][illegible]

2003 1-1

TempRange	label	byte
TempRange	label	byte
00	000	Level: 0
01	001	Level: 1
02	100	Level: 2
03	101	Level: 3
04	110	Level: 4
05	111	Level: 5
06	100	Level: 6
07	101	Level: 7

Altitude (m)	1994	2000
0	1.00	1.0000
10	1.00	1.0001
20	1.00	1.0002
30	1.00	1.0003
40	1.00	1.0004
50	1.00	1.0005
60	1.00	1.0006
70	1.00	1.0007
80	1.00	1.0008
90	1.00	1.0009

Abstract

828:857 Y-6

Note: The Macro "IFDEF" was added on 8-3-90 because
This code was used for another Product also called Ilyd. The
original code that was Working by 9/15/84 in there, the Macro for
Ilyd does not have Any code generation as p1yct Here since it
was not written for The new product. As faster processors were
added to Ilydy products, the tables changed to under them also
(see 4 485 5 1145)

Reference Temperature

EXHIBIT V-197

(26. (New): An apparatus, comprising:

a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and

a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed in response to successive readings of said monitored temperature indicating an upward trend in temperature (U)

(U) ... said clock manager reducing processing unit clock speed in response to successive readings of said monitored temperature indicating an upward trend in temperature

EXHIBIT I-3

```

;
; OSC, so set the temp level up by one
;

```

```

mov     bh,0000000b           ;Force downward
→ cmp     al,7                 ;Already at max?
je       NotTR_OSC             ;yep, leave alone
→ inc     al                   ;Force level temp up by one
NotTR_OSC:

```

```

; Time needs to be set based on T Level

```

```

mov     ah,7                   ;Max available
sub     ah,al                   ;7-7 = 0 so watch it!
cmp     ah,0
jne     NotRip2                ;Not zero
inc     ah                     ;Look at every minute
NotRip2:shl     ah,1            ;Align the time constant
or      ah,bh                  ;Align the direction
or      ah,al                   ;Align the TRange
mov     bl,al                   ;TRange
mov     bh,0                   ;Upper index.

```

Tlevel sets time – based on acceptable level of temperature rise or fall
 (direction gives rise or fall, and TRange give temperature Low and Max in range.
 Acceptable rate is time and temperature based dependent on direction of trend.

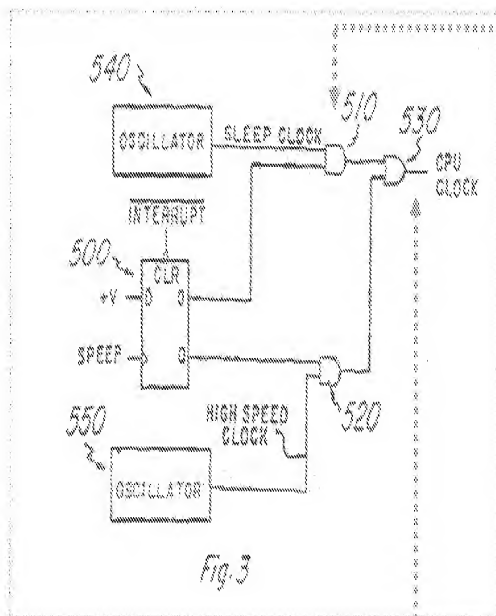
EXHIBIT V-138

126 (New) An apparatus, comprising:

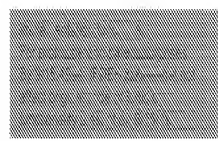
a temperature controller (T) for monitoring temperature associated said apparatus and, using said monitored temperature at least once as a starting point, predicting future changes in said monitored temperature; and

a clock manager (M) adapted to receive a control signal from said temperature controller, said clock manager reducing processing unit clock speed in response to successive readings of said monitored temperature indicating an upward trend in temperature. (U)

(U) ... said clock manager reducing processing unit clock speed in response to successive readings of said monitored temperature indicating an upward trend in temperature.



Rising faster than
Acceptable rate,
forces second
clock signal



Computes Clock
Signal.

Receive a First or
Second clock
signal

	5/4/1994	7/20/1994	8/20/1994	9/14/1994	9/15/1994	10/14/1994	11/8/1994	11/18/1994	12/15/1994	2/11/1995	2/25/1995	3/12/1995	3/24/1995	5/11/1995
Coding Started on various programs/subroutines (example XPM330.asm -enable/disable Power Management)	Started													
H_PWR was created		Completed												
HEAT.BAT used for Heat Testing Last Modified				Completed										
TEMP7MS INC functionally completed and heat testing started with New HEAT.BAT					Completed									
RAM Based functional implementation Completed					Completed									
...Temperatures and control signals stored in CMOS RAM area to be read by control logic for predicting future temperature such as Up, Down, Stable, or Oscillating.					Completed									
Logic completed for Claims					Completed									
...Claims 17 and 18 working in prototype					Completed									
...Claims 21, 23, 74-76 working in prototype					Completed									
...Claims 77, 79, 80, 81, and 82 Prototype Unit completed; used keyboard, LCD Display, and Intel CPU)					Completed									
...Claims 63, 64 and 65 (Prototype Unit completed used PCI Bus coupled to CPU)					Completed									
...Claims 63, 64 and 65 (Prototype Unit completed used PCI Bus coupled to CPU with PCMCIA controller)					Completed									
...Claims 69-94 (Prototype Unit completed used keyboard controller and port 604Ah to get temperature)					Completed									
...Claims 95-100 (Prototype Unit completed but limitation of technology forced usage of adjacent sensor to CPU)					Concluded									
...Claims 101-106 working in prototype					Completed									
...Claims 110-113, 115-116, 122-126 working in prototype					Completed									
TEMP7MS.ASM Coded with channel 606Ah access to AD converter		Completed		Used for Testing										
Rewrite TEMP7MS.ASM and TRANGE INC for new channel AD access for temperature sensor, review for Flash					Started		Informed Testers		Completed					
Trange INC Recoded from TEMP7MS.ASM for new channel access, Ports 54 and 50h, review for Flash					Started	Used for Testing	Informed Testers			Completed				
Tested Heat and Power Management on Pentium 60MHz CPU (75 MHz already tested on 9/15/1994)								Completed						
Trange INC Recoded for BatteryPro Access via Flash Memory										Completed				
Started coding on Auto, On, and Off control by User Selection, ROM Based										Started		Completed		
Auto, On, and / or Off allowed to be setup by User functional implementation ROM Based.												Completed		
...Logic completed for Claims:												Completed		
... Claim 19												Completed		
... Claim 20												Completed		
... Claim 107, 108, and 109												Completed		
Added Tables for Faster Processors as Intel introduced new products													Completed	